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Emotion Regulation, Risk-Taking, and Experiential Learning:

A Methodological Exploration

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Emotion Regulation, Risk-Taking, and Experiential Learning:

A Methodological Exploration

by

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Emotion Regulation, Risk-Taking, and Experiential Learning:

A Methodological Exploration

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Despite adolescence and emerging adulthood being a time of peak physical ability, it is marked by a dramatic increase in morbidity and mortality, primarily driven by poor behavioral and emotional control (Dahl, 2004). Multiple lines of recent research are now focusing on how maturation of decision-making impacts risk-taking, and more specifically, what role emotion regulation plays (Weinberger et al., 2005; Steinberg, 2007). Rather than avoiding risk factors, a call is made for strength and skills-based approaches to risk-taking interventions.

The purpose of the current exploratory study was to assess the efficacy of an experiential learning (EL) intervention designed to increase participants' emotion regulation skills and decrease risk-taking. Twenty-eight emerging adults participated; 15 were assigned to the experimental group and presented with two separate sessions on emotional regulation and risk-taking using EL methodology (low and high element activities). The control group's 13 participants were presented with two separate powerpoint lectures on emotion regulation and risk-taking. Participants' difficulty with emotion regulation and risk-

taking were assessed prior to the first session, between sessions, and one week following the second session. Qualitative interviews assessed participants' understanding of how emotions and risk-taking are connected and process measures assessed the emotional impact of the intervention activities.

While hypotheses were not confirmed, results revealed a significant decline in difficulty with emotion regulation across time for all participants. Unexpectedly, however, there were no significant differences between the groups on emotional regulation and the group x time interaction was also not significant. Additionally, risk-taking significantly increased across time. The control group reported more risk-taking across the three time periods than the experimental group. The time x group interaction approached significance [$F(2,56) = 2.68$, $p = .07$], showing consistent increases for the control group but relatively low levels for the experimental group. Qualitative data revealed that participants had clear notions of how emotions drive risk-taking, how the thrill of risk-taking can be used to displace negative feelings, and how one's need to connect to others can lead to risk-taking. Experimental group participants demonstrated a shift from global thinking about emotions and risk-taking to more specific thoughts about emotional awareness as a key skill.

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Chapter I: Introduction

Despite adolescence being a time of peak physical ability, it is marked by a dramatic increase in morbidity and mortality, primarily driven by poor behavioral and emotional control (Dahl, 2004). The 2007 Youth Risk Behavior Surveillance (YRBS) revealed that 72% of all deaths between the ages of 10 and 24 are from car accidents, unintentional injuries, homicide, and suicide (Eaton et al., 2008). Other research has shown that more than half of youth surveyed regularly take part in multiple risk behaviors (Boggess, Lindberg, & Porter, 2000). This seemingly normative pattern of adolescent risk-taking behaviors proves problematic well into adulthood. Two of the leading causes of all deaths (heart disease and cancer) are tied to prevalent risk behaviors that begin in adolescence (Eaton et al., 2008). Risk-taking increases with age across adolescence, peaking in late adolescence and early adulthood (Linberg et al., 2000; Zuckerman & Kuhman 2001). Arnett (2000) maintains that this period of time (late adolescence-early adulthood) is really a developmental time unto itself called emerging adulthood. During this period parental monitoring decreases dramatically and focus is predominantly on peers and the self. Risk-taking is at its height during the exploration and identity development of emerging adulthood (Arnett, 2005). Risk-taking behaviors provide opportunities to individuals learn about themselves and connect with others. Emerging adulthood is a pivotal time socially and developmentally. Understanding the constellation of risk behaviors is not only essential for the health of today's youth, but for that of tomorrow's adults as well.

Years of research have resulted in several theoretical approaches and orientations to understanding adolescent and emerging adult risk-taking (Iriwin, Igra, Eyre, & Millstein, 1997). Dispositional models deal with personality factors related to adolescent risk-taking. Ecological models hone in on the impact of neighborhoods, friends, and family. Biological models have traditionally centered on the effects of puberty. Each of these aspects is incorporated into Irwin and Millstein's (1986) Causal Model of Adolescent Risk-Taking. At a meta-conceptual level this model does well in describing adolescent risk-taking. But in terms of specific mechanisms driving the behavior and especially regarding areas where interventions may be fruitful, it falls somewhat short. While pubertal maturation has been implicated since the beginning, cognitive development has begun to take a center stage in the quest for mechanisms involved in risk-taking behaviors. Studies have revealed that the areas of the brain involved in decision-making are still maturing well into the third decade of life (Weinberger, Elvevag & Geidd, 2005). Decision-making abilities are at the crux of all risk-taking behaviors. While adolescents are able to demonstrate the logic of adults in decision-making tasks, they often show deficits when other factors (presence of peers, impulse control) are added to the equation (Gardner & Steinberg, 2005; Reyna & Farely, 2006).

The social/cultural context in which risk-taking happens is important. The two leading factors in this area are parents and peers (Irwin et al., 1997). Parental monitoring and expectations are significant determinants of adolescent risk-taking (Stanton & Burns, 2003). Emerging adulthood in industrialized countries marks a time culturally when parental monitoring significantly decreases as many of these young adults go to college

or get jobs and move out of their family's home (Arnett, 2005). It is logical to see that the absence of parental monitoring in emerging adulthood provides more opportunities for risk-taking. Peer groups and peer group norms are major factors in risk-taking as well (Stanton & Burns, 2003). Having friends and peers who endorse and engage in risk-taking behaviors dramatically increase the likelihood of an individual part-taking in such behaviors themselves (Stanton & Burns, 2003). Again, in emerging adulthood these behaviors are common and desires for affiliation are high during a time when many are establishing independence from the guiding forces of their families, physically and emotionally (Arnett, 2005).

Multiple lines of recent research are now focusing on the social/developmental aspects of decision-making and how this impacts risk-taking. More specifically, research is focusing on how social cues and emotion regulation play pivotal roles in decision-making (Dahl, 2004; Weinberger et al., 2005; Reyna & Farley, 2006; Steinberg, 2007). According to Steinberg (2007), socio-emotional factors underlie many risk-taking behaviors and obscure judgment. One need only look to the impulsivity driven by boredom, frustration, or even thrill seeking to see examples of how emotions can drive risk-taking behaviors, especially in the context of a peer setting where "joining in" is heavily encouraged. Impulse control and sensation seeking are two well-studied, emotional aspects of risk-taking (Zuckerman & Kuhlman, 2000). Researchers have come to find that emotion regulation is no easy task. Indeed, emotion regulation matures with age and experience (Steinberg, 2007; Reyna & Farley, 2006). Primarily two brain mechanisms appear to be involved in risk-taking behaviors. One brain mechanism draws

and rewards youth when they encounter social and emotional stimuli, while the other is an underdeveloped executive control center responsible for planning and self-regulation (Steinberg, 2007). These two mechanisms appear to vie for control, with the socio-emotional system being more dominant in early adolescence (Steinberg, 2007). Areas of the brain involved in self-regulation do not fully mature until the mid-twenties (Weinberger et al., 2005). An important point is that control of the social-emotional center is learned through an intricate dance between instructive social experiences and maturation of the physical system. Control of this system is more readily described as emotion regulation. Morris, Silk, Steinberg, Myers and Robinson (2007) provide an excellent review of the development of emotion regulation. They define emotion regulation (ER) as internal and externalized efforts to manage the "occurrence, intensity, and expression" of emotional experiences. Children first learn about emotions and *how* to deal with them from their parents and family context (Morris et al., 2007, p. 363). As children grow sources of emotion regulation modeling and learning expand to include teachers and peers. In a longitudinal study by Michalik, Eisenberg, Spinrad, Ladd, Thompson, and Valiente (2007), positive emotion regulation skills modeled by parents were tied to successful, prosocial behaviors in adolescents. The effects of social modeling and emotion regulation extend well into emerging adulthood; the age period between 18-27. Ineffective emotion regulation modeling by parents is significantly related to emotion dysregulation and risk-taking (alcohol use) in college students (Fischer, Forthun, Pidcock, and Dowd, 2007). Positive youth development has burgeoned as a parallel and often intersecting line of research.

Positive youth development has broadened to include positive outcomes in youths' lives as well as identifying mechanisms or processes that contribute to such outcomes (Ungar, Brown, Liebenber, Othman, Kwong, Armgsrong, and Gilgun, 2007). Ungar et al. (2007) acknowledge the importance of social forces in shaping youth's assets and skill sets used to cope with life's challenges. Building socio-emotional "strengths" is seen as essential for positive youth development (Park, 2009). Park (2009) maintains that we should focus on shoring up capacities that are generative rather than just being singularly problem focused. Emotion regulation skills are embedded through-out several core strengths deemed as central to positive youth development (perseverance, social intelligence, self-regulation) (Park, 2009). Rather than focusing on avoiding or getting rid of risk-factors, a call is made for strength-based approaches and interventions in terms of youth development. This is a point of intersection between youth development and risk-taking research.

Decision-making and emotion regulation have been noted as more useful areas for potential interventions dealing with risk-taking (Steinberg, 2007; Fischer et al., 2007). Few researchers have examined decision-making and self-regulation as they relate to risk-taking among 18-24 year old emerging adults. Moreover, to date, no studies have examined if non-clinical emerging adults can be taught to increase their ability to regulate their emotions. Emotion regulation skills taught through an intervention may prove a successful mediator of risk-taking behaviors.

Pedagogy is important when it comes to delivering an effective intervention. Essential ideas can suffer from poor delivery methods. Experiential learning techniques

show promise as a medium for teaching emotion-regulation skills. Kolb (1984) discusses how experiential learning techniques use concrete experiences as a basis for immediate and overt instruction, otherwise known as outcome feedback, in a group setting. Peer group settings are known to affect individuals' behaviors (Stanton & Burns, 2003; Gardner & Steinberg, 2005; Yalom, 2005). These two particular features, outcome feedback and peer group setting are particularly well suited for the learning needs of adolescents and emerging adults. Peer groups are a guiding influence in risk-taking, but can also be harnessed as purposeful and instructive force as well (Yalom, 2005). Part of the challenge for learning how to regulate one's emotions is the ability to process one's emotions in an aroused setting (as often happens in experiential learning activities) in the distracting presence of peers (Gardner & Steinberg, 2005). In experiential learning, facilitator led, semi-structured discussions follow each activity/experience, providing an opportunity to review multiple perspectives on the role that emotions play in each person's actions. Instructive post-activity group discussions can be an educational force (Yalom, 2005). While experiential education has been recommended for years, most risk-taking related programs fail to employ it (Kirby, 2001).

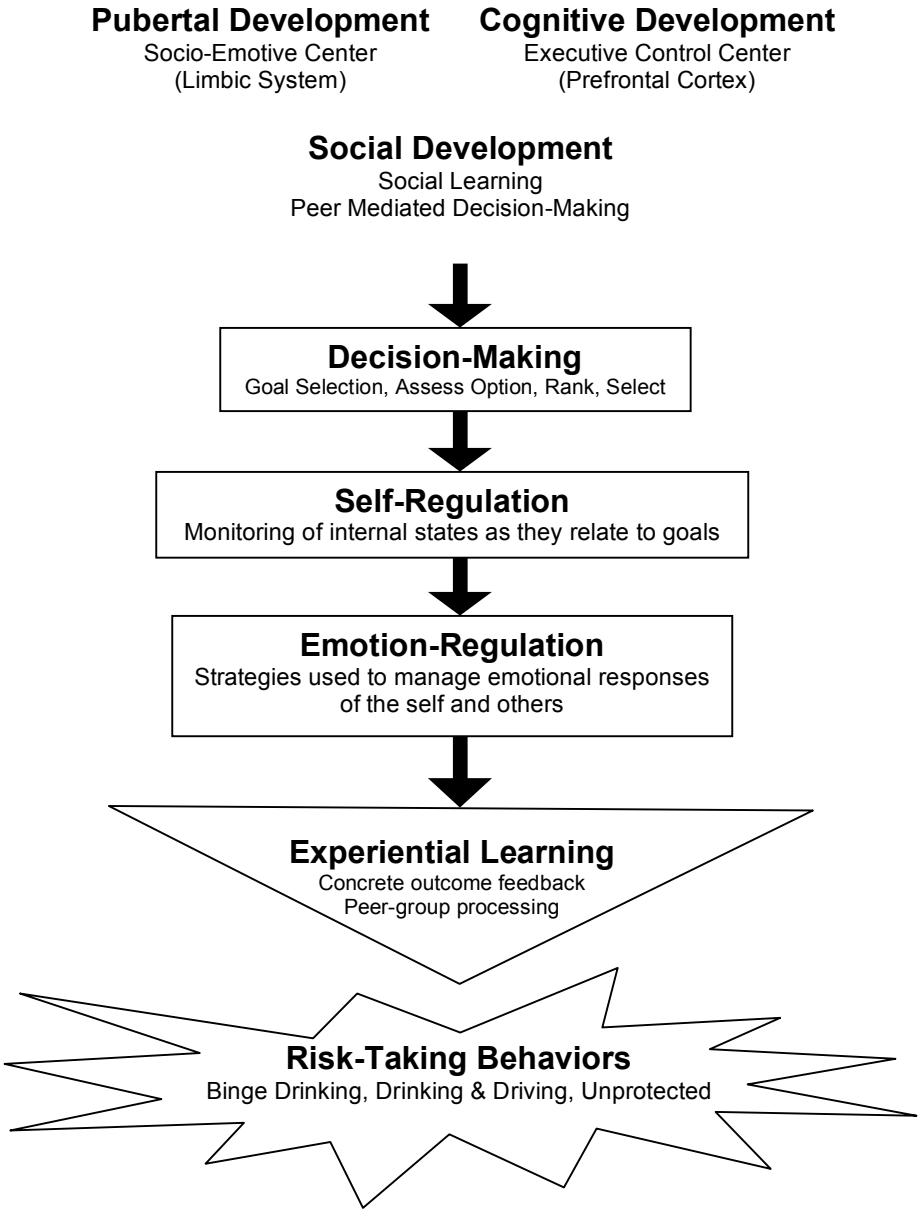
If it is possible to increase emotion regulation skill sets, then experiential learning might be an efficient mechanism for reducing risk-taking behaviors that have become so prevalent. The purpose of the current exploratory study was to assess experiential learning techniques as an effective methodology for teaching emotion regulation and risk-reduction skills to small samples of emerging adults. Small, peer-based groups of 18-21 year olds engaged in two learning sessions. Participants were split into a control group

and experimental group. Both groups received the same curricula. The control group received two power point presentations, while the experimental group received an intervention in the form of two experiential learning-based sessions. Core concepts related to risk-taking and emotion-regulation skills were discussed throughout each session both didactically and within post-activity debriefings (discussions). The first session was held on a ROPES/Challenge Course and involved high-element (climbing) activities, each was followed by an emotion checklist and facilitator-led debriefings. The second session engaged the group in several problem-solving activities, each was followed by an emotion checklist and facilitator-led debriefings. The critical elements involved in the experimental condition were outcome feedback given in peer-group discussions. Pre-curricular measures were obtained prior to the first session activities. A mid-assessment was delivered via e-mail (Survey Monkey). Follow-up measures were completed after completion of the second session.

The goal of the intervention was to use the powerful forces of social learning in a group setting to increase participants' emotion regulation skills as well as raise awareness surrounding emotional aspects of risk-taking. Individuals in the experimental condition receiving the intervention were expected to show gains in emotion-regulation skills and a decline in risk-taking behaviors, while those in the control condition were not. A secondary goal was to examine, qualitatively, participants' nascent understanding of how emotions and risk-taking are connected and to see if their ideas changed from pre to post assessment. This exploratory study was a practical application of an emotion regulation approach to risk-taking behaviors. While self-regulation models of adolescent risk-taking

are gaining momentum, there is still little applied research. Few, if any, studies exist looking into changing emotion regulation specifically tied to risk-taking behaviors. The proposed study was a step towards filling the gap in the applied literature on the self-regulation of emotions connected to risk-taking behaviors. See Figure 1. for a conceptual overview.

Figure 1. Conceptual Overview of the Proposed Study



Chapter II: Literature Review

Adolescence distinguishes itself from other periods of life in many ways. Unlike any other time, major health threats come not from disease, but from preventable, volitional acts (Boggess et al., 2000; Iriwin, Igra, Eyre & Millstein 1997). Individuals and society as a whole pay a high price for the risks of youth. Understanding, predicting, and preventing adolescent risk-taking is imperative, as many of these behaviors evolve into or exacerbate the morbidities and mortalities that pervade adulthood. A brief review will first explore adolescent risk-taking behaviors and models designed to explain them. Recent research will bring a focus on the critical role of decision-making and self-regulatory processes in adolescent risk-taking. Key developmental issues in terms of the problem and possible solutions will be discussed. Finally, a program addressing risk-taking and self-regulation of emotions will be proposed.

Risk-Taking Behaviors

Exploration of the self, the social realm, and the physical world is natural and normal during adolescence (Stienberg, 2004). Exploration can be positive or negative. Positive exploration includes new experiences that help people understand themselves and connect with others without harm to health. Joining an extracurricular activity is an example. Negative exploration has the potential to lead to negative health outcomes. An example of this would be getting drunk in order to connect with others. Irwin et al. (1997) make a distinction between exploring and risk-taking behaviors that threaten

health. Others see risk behaviors as "voluntary behaviors that threaten the well-being of teens and limit their potential for achieving responsible adulthood" (Lindberg, Boggess, Porter, and Williams, 2000, p.9). Risk-taking behaviors are most likely to debut in adolescence (Reyna & Farley, 2006; Irwin et al., 1997).

Boggess et al. (2000) completed a report for the Department of Health and Human Services that combined data from three national surveys to look at adolescent risk-taking from 1991-1997: the Youth Risk Behavior Survey (YRBS), The National Survey of Adolescent Males (NSAM), and the National Longitudinal Study of Adolescent Health (Add Health). Ten risk behaviors were investigated: regular alcohol use, binge drinking, tobacco, marijuana, and other drug use, fighting, carrying weapons, suicidal thoughts/attempts, and risky sexual activity. Analysis revealed an increase in the number of students *not* engaging in any of the 10 risky behaviors across the 6 year period ('91-'97); and a proportional decline in those participating in multiple risks. High-risk students who engaged in multiple-risk behaviors (5 or more) *maintained* a steady rate from 1991-1997. Data from the 1997 YRBS revealed that 16% of the 9^{th}-12^{th} graders took part in 5-10 risk behaviors regularly; an additional 37% engaged in 2-4 risk behaviors regularly. Together, a total of 52% participated in regular risk-taking behaviors. Most risks reported involved students who engaged in multiple-risk behaviors. The 1995 Add Health revealed that although taking part in multiple-risk behaviors is common, it does not preclude engagement in positive behaviors (school activities, sports, religious and /or family involvement). It is not *just* the "troubled" teens that take risks. It should be noted that as participation in positive behaviors increased, there was less reporting of multiple risk

behaviors. Participation in positive behaviors declined with age from 7th to 12th grade (Lindberg et al., 2000).

The 2007 YRBS shows declines in some risk-taking behaviors, but the overall rates are still concerning. Over 25% of the youth surveyed reported binge drinking, five or more drinks of alcohol within a couple of hours, at least one day of the last 30. Approximately 19% reported using marijuana one or more times in the last 30 days. Among sexually active youth, 39% hadn't used condoms the last time they had engaged in intercourse. Of the sexually active, over 22% used alcohol or drugs before their last experience with sexual intercourse.

Risk-taking behaviors show a stable developmental trajectory, such that behaviors increase steadily with age (Linberg et al., 2000; Zuckerman & Kuhman 2001). According to the 1997 National Longitudinal Survey of Youth, age of first alcohol use goes from 27.8% starting at 13, to 66.7% reporting first use at 16, and 89.7% having their first use by 19 years of age. Sexual intercourse shows similar trends, with 14% of the sexually active youth initiating at 13 years of age followed by 64.1% at 16, and 94.9% at 19 years of age. In a very general sense, adolescence can be thought of as an awkward time that falls between sexual maturation and taking on of adult roles (Dahl, 2004). This notion is particularly appropriate because it is broad enough to include a special class of individuals who have not yet fully transitioned into adulthood. While adolescence has been seen as the time of highest risk-taking, this has changed in industrialized countries, which see identity exploration extended well into the third decade of life (Arnett, 2000; 2005).

Over the past century, adolescence has been a significant source of study as a distinct developmental period. Adolescence has traditionally been seen as a transition into the next stage of life, adulthood. Research is finding that the social and cognitive development that was assumed to be completed by the end of high school, is in fact not ending until the mid twenties (Weinberger, Elvevag, & Geidd, 2005). For those living in industrialized cultures, Arnett (2000) proposes that the time between adolescence and adulthood has evolved into more than just a time of transition. He calls this developmental period of 18 to 25 years old emerging adulthood (Arnett, 2000; 2005).

Arnett (2005) describes five characteristics of emerging adulthood. The first is that this is a time of exploring one's identity. Identity exploration at this time centers on romantic relationships and work. Emerging adults tend to explore multiple, longer-term relationships rather than the brief relationships of adolescence (Arnett 2005). Emerging adults also tend to have multiple jobs. A period of greater instability and mobility is the second characteristic of emerging adulthood. This mobility also marks a time where greater independence from the family is established. The highest rates of moving occur during this time. A peak in self-focus is the third characteristic of emerging adulthood. Individuals during this period have generally not yet taken on the responsibilities, distractions, and pressures of adulthood; and as such are freer to reflect and explore themselves (Arnett, 2005). The structure and importance of family transitions, to some degree, over to friends, who act as an important reference point during this period of self-focus. The fourth characteristic involves feelings of being "in between". Emerging adults do not feel like adolescents anymore but also do not really think of themselves as an adult

(Arnett, 2005). This aspect has some important ramifications regarding risk-taking and substance use. Even though emerging adults get to make a large number of choices for themselves without adult supervision; they don't yet feel like they are fully adult. The parental monitoring that might have been present in adolescence is no longer a guiding constraint in emerging adults' lives. Many individuals in this time period define adulthood by behaviors and roles. For example, they see adults as having responsibilities (to a spouse, children, or career). Although behaviors like binge drinking and driving intoxicated are seen as unacceptable for adults, they may be seen as acceptable for emerging adults (Arnett, 2005). The final characteristic of this period has to do with feelings of possibility (Arnett, 2005). Emerging adulthood is a time when major changes in the life course are possible. It is also a period of high optimism; which may cloud or diminish known consequences for risky behavior (Arnett, 2005).

Risk-taking has traditionally been seen as an adolescent phenomenon. But substance use and abuse is at its highest during emerging adulthood, and is thought to function either as a part of new experiences or as a way to cope with the role ambiguity inherent in this developmental period (Arnett, 2005). Many risk-taking behaviors peek in this period of time (Arnett, 2000; Nelson & McNamara Barry, 2005). College populations are particularly relevant in terms of emerging adulthood due in part because they are exploring their identities in ambiguous settings, usually with out the daily guidance of parents and family (Arnett, 2005). This is unlike others in their cohorts who enter the well-defined adult world of the workforce or building of a family. Emerging

adults should be considered as a natural part of the discussion of adolescent risk-taking given the information above and their heavy involvement in risky behaviors.

Risk-taking behaviors are a vital area of public health because they contribute to the leading causes of adolescent and emerging adult morbidity and mortality (MMWR, 2006). Unintended pregnancies and sexually transmitted infections that result from unprotected sex are major social morbidities faced by adolescents (MMWR, 2006). The two major causes of all deaths are cardiovascular disease and cancer, each of which is preceded by risk behaviors that started in adolescence (MMWR, 2006). Individuals engaging in multiple risks are at significantly greater risk for negative health outcomes (Lindberg et al., 2000). On a broad social scale, risk-taking behaviors are a critically important area of study. Decades of research have been aimed at examining risk-taking behaviors, and several models explaining their development have been proposed.

Risk-Taking Models

In their seminal review of risk-taking, Irwin and his colleagues (1997) describe risk-taking models in terms of ecological, dispositional, and biological perspectives. The ecological perspective places the environment as the primary force acting through family, peers, schools and communities. Support for the ecological model can be found in a 16-year prospective study of sexual and other risk-taking behaviors, demonstrating that social factors were significant predictors of risk-taking (Siebenbruner, Zimmer-Gembeck, & Egeland, 2007). Parents who regularly monitor their adolescents reduce risk-taking opportunities; while peers who engage in risk-behaviors increase adoption of such actions

(Irwin et al., 1997). The mere presence of peers has been shown to increase risk-taking (Steinberg, 2004; Gardner & Steinberg, 2005).

Dispositional perspectives view low self-esteem, depression, deviance, social inadequacy, sensation seeking and impulsivity as factors that drive risky behaviors (Irwin et al., 1997). Zuckerman and Kuhlman's (2000) studies have investigated three main factors involved in risk-taking: impulsive sensation seeking, aggression hostility, and sociability. Sensation seeking was the most significant predictor of risk-taking. Sensation seeking is a blend of dispositional and biological factors (Zuckerman & Kuhlman, 2000; Greene, Krcmar, Walters, Rubin, & Hale, 2003). Sensation seeking is an aspect of personality that is marked by seeking out novel, varied, or intense experiences and is accompanied by a willingness to engage in risky behaviors to achieve such experiences (Zuckerman & Kuhlman, 2000). Males tend to measure higher in sensation seeking than females; and sensation seeking also tends to run in families (heritability, r=.58). Certain neurological receptors are known to affect behavior; some individuals inherit a system that seeks out novel/exciting stimuli resulting in a strong surge to their pleasure/reward system. Another part of inheritance is a *less active* set of receptors associated with behavioral inhibition. This neurological pattern of stimulus seeking and low inhibition increases in the teen years and peaks in late adolescence/early adulthood (Arnett, 1992; Zuckerman & Kuhlman, 2000; Martin, Kelly, Rayens, Brogli, Brenzel, Smith, & Omar, 2002). This pattern of behavior affects decision-making.

Developmentally, adolescents and emerging adults are primed for sensation seeking while at the same time they suffer deficits in their ability to self-regulate their

behavior (Romer & Hennessey, 2007). This proclivity towards novelty and intense experiences is accompanied by lowered inhibitory control, which affects self-regulation and decision-making. Romer and Hennessey (2007) hold sensation seeking as a pivotal part of immature decision-making processes. This critical junction of sensation-seeking and self-regulatory aspects of decision-making will be central later in this discussion.

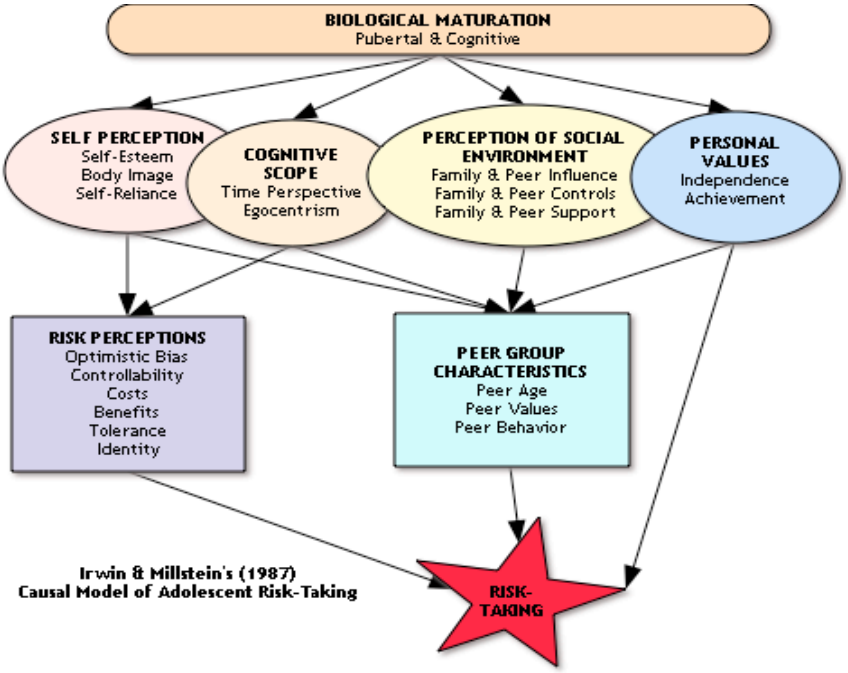
Biological perspectives of risk-taking look more to issues related to maturation, which is strongly indicated in adolescent risk-taking (Steinberg, 2007; Zuckerman and Kuhlman, 2000; Byrnes 1998; Iriwn et al., 1997). Pubertal and cognitive maturation are important biological factors. Pubertal onset marks a dramatic rise in risk-taking behaviors, increasing from earlier to later adolescence (Irwin et al., 1997; Patton, McMorris, Toumbourou, Hemphil, Donath, & Catalona, 2003; Stienberg, 2007; Siebenbruner et al., 2007). Pubertal development results in *emotional*/*affective* changes in motivation as well. Areas affected include: sexual and romantic motivations, emotional amplitude, sleep, and female mood disturbances (Dahl, 2004). Given this brief review of research, it is easy to see how a comprehensive model is needed to understand the complex problem of adolescent and emerging adult risk-taking.

Irwin and Millstein (1986) integrated well-known factors from the psychological, social, and biological perspectives on risk-taking to create the Causal Model of Adolescent Risk-Taking (Irwin & Millstein, 1986). The model places biological maturation (pubertal and cognitive development) as impacting four critical domains: cognitive scope, self-perception, perceptions of the social environment, and personal values (see Figure 2). Cognitive scope deals with how adolescents tend to have a self-

centered orientation towards the world and are limited in their future-time perspective. Adolescents are not good at connecting current events with past or future consequences. This lack of connection plays a major role in how adolescents make decisions (Byrnes, 1999). Self-perceptions are comprised of self-esteem, self-reliance, and body image. Negative self-perceptions, low self-esteem and reliance on others can be particularly problematic and set the stage for risk-taking behaviors. Individuals who have low opinions of themselves and rely on others for a feeling of worth are more likely to engage in risk-behaviors (Boden & Horwood, 2006). Personal values play an important role as well (Irwin et al., 1997). Youth who value independence and have discernable achievement goals generally do better in terms of risk-taking. Heavy dependence on peer groups for a sense of identity, coupled with low aspirations, set the stage for risky behaviors. Irwin and Millstein (1986) maintain youths' personal values combine with risk perceptions to motivate or inhibit risk-taking behaviors.

Risk perceptions are shaped by self-perceptions and perceptions of the social environment. Perceptions of the social environment are related to adolescents' thoughts about family and peers including the influence and control that important others have on the individual. These perceptions of others influence their relationships and risk behaviors (Keren & Ben-Zur, 2007). Individuals who do not feel cared for and supported by others take more risks (O'Connor, 2000). Adolescents tend to have a positively biased sense of control over situations. They also tend to over weigh the benefits and underestimate the costs of actions (Reyna & Farley, 2006). Adolescents are more likely to display optimistic biases-they see others as more likely to suffer in risky situations than

Figure 2. The Causal Model of Adolescent Risk Taking



themselves (Reyna & Farley, 2006). The perceived benefits of a situation are better predictors of risk-taking than *accurately* perceived risks (Reyna & Farley, 2006). Adolescents see the downside to risky situations; it is just that the upside is more appealing, salient, and ultimately motivating (Weinberger et al., 2005; Reyna & Farley, 2006).

Behavioral willingness to perform a risky behavior has been shown to be an even better predictor than perceived benefits and risks (Reyna & Farley, 2006). Immature risk perceptions combine with parent and peer group characteristics to create a constellation that surrounds risk behaviors. Peer groups that are older, or that value risk behaviors are more likely to lead individuals into risky actions (Irwin & Millstein, 1997). Irwin and Millstein's (1997) model articulates well how biological maturation propels a cognitively immature system into a complex social world. Risk-taking in this context can be seen as an event that arises when young or immature individuals do not have the cognitive skills and social support/modeling necessary to navigate the intricacies of interpersonal and group dynamics.

Despite a wide range in theories, research, and interventions, adolescent risk-taking continues to be a significant public health issue (Irwin et al., 1997). Recent research has shed light on the importance of decision-making and self-regulation in adolescent and emerging adult risk-taking. Klaczynkski, Byrnes and Jacobs (2001) define decision-making as a multi-component process that begins with a recognized discrepancy between one's current state and one's goal state, involves identifying and evaluating the potential for various options to reduce the discrepancy, selecting and planning a course of

action, implementing the required actions, evaluating the consequences of those actions, and processing and storing feedback regarding an action's efficacy. The ability to inhibit impulses driven by emotion is seen as a critical aspect of decision-making (Klaczynski et al., 2001). Abilities to control situational influences, emotions, and motivations related to temperament are seen as major disruptions in decision-making. Each of these abilities is viewed as developing with age (Klaczynski et al., 2001). Many of the driving factors of risk-taking funnel through adolescents' and emerging adults' ability, or inability, to regulate their emotions and cognitions. (Weinberger et al., 2005; Reyna & Farley, 2006).

Decision Making, Self-Regulation, and Emotions

Self-regulation can be thought of as efforts to control thoughts, feelings, and/or actions. Self-regulation can also be the monitoring of one's internal states and behaviors as they relate to goals, and modifying those states and actions accordingly (Vohs & Baumeister, 2005). Emotion regulation is a critical part of self-regulation. Gross (2001) sees emotion regulation as all the strategies used to increase, maintain, or decrease emotional responses. Emotion regulation happens when there is an attempt to control some aspect of an emotional response (Ochsner & Gross, 2001). Emotion regulation affects a person's ability to meet their needs and achieve their goals (Lopes, Salovey, Beers, & Cote, 2005). Emotion regulation is not just the recognition and expression of feelings, it is the mastery of them in an adaptive manner. Relationships with others are intimately tied to emotion regulation (Leary, 2005). Emotion regulation is considered one of four crucial parts of emotional intelligence and affects the quality of social interactions (Lopes et al., 2005). Emotional intelligence has been defined as the perception, use, and

management of emotions (Salovey & Grewal, 2005). The concepts of emotional intelligence and emotion regulation overlap considerably. Scholars in the domain of emotion regulation see perception, use, and management of emotions as skills that develop with age.

Self-regulation has been studied in several academic realms. It is an important construct in the psychology of learning and as it turns out, in risk-taking (Byrnes, 1998; Miller & Brynes, 2001; Vohs & Baumeister, 2005). Miller and Byrnes (2001) maintain that individuals are self-regulated decision-makers who set adaptive goals in a dynamic environment. The ability to control one's thoughts and behaviors is an essential part of adapting to the environment and achieving goals. This ability develops over time as individuals come to understand and monitor the effectiveness of their decisions (Miller & Byrnes, 2001). Strategies to deal with poor choices/decisions develop with time as well. Self-regulation is a critical ability that falls under the general rubric of decision-making (Byrnes, 1999).

Adolescent Development, Decision-Making, and Emotions

Dahl (2004) provides an excellent account of how emotional and cognitive development impact adolescent decision-making and ultimately, risk-taking. He describes how pubertal and cognitive maturation are enmeshed in social complexities. Dahl argues that even though adolescence is an organic peak in physical capacity, it is marked by a 200% increase in morbidity and mortality, and this is primarily due to problems related to poor behavioral and emotional control/self-regulation (Dahl, 2004). He proposes that the upsurge and plasticity of neural networking in adolescence could be a developmental

window related to self-regulation of emotions, much in the same way that ages 3-5 are marked by the intense development of language. Maturation of the neural circuitry associated with emotions and higher cognitive functioning takes place over the course of adolescence and emerging adulthood (Weinberger et al., 2005). Adolescents appear to have more intense emotions (Arnett, 2000) than adults, and it motivates their behavior to a greater degree. Adolescents' emotions are quicker to trigger and have higher amplitude (Weinberger et al., 2005; Renya & Farley, 2006). As mentioned before when discussing Sensation Seeking models (Zuckerman & Kuhlman, 2000), adolescents are more likely to seek out situations that are arousing and result in bigger rewards. This emotional drive puts them at a disadvantage in that they do not yet have the mental hardware, literally the neural circuitry, to *process* these big emotions (Dahl, 2004; Wienberger et al., 2005; Steinberg, 2007). Neural research has shown that connections in the prefrontal cortex (area responsible for higher-order functions such as decision-making) mature considerably *during* adolescence (Lambe, Krimer, and Goldman-Rakic, 2000), but are not fully developed until early adulthood. Emerging adulthood appears to be a focused time of transition from disconnected, and underdeveloped adolescent cognitive profiles to the integrated workings of adult brains, with those entering the stage showing greater risk-taking behaviors (Arnett, 2005).

Steinberg (2007) maintains that risk-taking results from the interaction between two neural processes that directly affect decision-making. Research using functional Magnetic Resonance Images (fMRI) has shown that one of the systems attends to social and emotional events; while the other system focuses on higher-order cognitive activities

(Drevets & Raichle, 1998). Drevets and Raichle's (1998) research shows that when events are heavy in emotional content, there is a quieting of the areas of the brain heavily involved in decision-making. And when thoroughly engaged in cognitive tasks, the socio-emotional areas of the brain take a back seat. The research reviewed so far illustrates how adolescents and emerging adults are primed for and seek out novel and emotionally rewarding experiences. When they are able to achieve these experiences, they are at some deficit in terms of decision-making capacity.

Weinberger and his colleagues (2005) present a compelling summary of adolescent and emerging adult neurological development and the implications for behavior. Several of their key points follow. First, the brain is *far* from being completely developed by adolescence-in fact there are stark differences from the beginning of puberty to the late teens (Giedd, Blumenthal, Jeffries, Castellanos, Liu, Zijdenbos, Paus, Evans, & Rapoport, 1999). Just before the brain and body are bombarded with the onslaught of pubertal hormones, a large production of neural connections takes place. One of the primary facets of development in this time is the ever-increasing density of the brain's neural circuitry. This results in the brain's ability to perform more efficiently and coordinate abilities involved in multi-tasking. As this maturing gains momentum, myelination increases, creating faster communication networks (Weinberger et al., 2005). The executive center of the brain, the prefrontal cortex, orchestrates complicated functions like learning, socialization, controlling impulses, planning, and directing attention. The prefrontal cortex is not fully integrated with the rest of the brain until the mid 20's (Geidd et al., 1999). The self-regulatory functions of the prefrontal cortex do

not exercise their full role (in competition with emotional processing) in decision-making until late adolescence or emerging adulthood (Weinberger et al., 2005; Steinberg, 2007).

Functional magnetic resonance imaging studies of adolescent brains have revealed that among adolescents, the amygdyla, the "emotion center" of the brain, is activated when identifying facial expressions (Baird, Gruber, Cohen, Renshaw, Steingard, & Yurgelun-Todd,1999). Adults use the prefrontal cortex, also known as the executive center of the brain. Adolescents' feelings dominate their decision-making. In keeping with a not yet fully integrated system, adolescents have a hard time tuning out extraneous information, while mentally drawing on resources to formulate plans based on possible outcomes (Weinberger et al., 2005). As noted previously, there is a tendency towards an "optimistic bias." Although adolescents and emerging adults see potential for harm, they simply do not think it will happen to them. This directly connects to Dahl's (2004) point about emotional and behavioral difficulties of adolescence being attributable to a developmental disconnect between pubertal maturation and cognitive development. The motivation and emotion systems are fully powered and ready to go, but the control tower is not able to fully guide the way. This emotionally biased processing sheds new light on the impulsive decision-making style of adolescents researched for years (Weinberger et al., 2005).

Steinberg (2004) sees the difference between adult and adolescent decision-making/risk-taking as arising from psychological and social variables that influence self-regulation. Adolescence is a time of growing independence from the family. At the same time individuals are driven to "fit in" with their peers. In so doing, they walk a fine line

between gaining acceptance and self-esteem through social interactions and having their actions dictated by them. Youth want to feel like they belong and are sometimes willing to do risky things in order achieve this. Peer influences on risk-taking and decision-making in adolescents and emerging adults were clearly demonstrated in Gardner and Steinberg's (2005) study. Over 300 individuals were split into three groups (13-16yr/18-22yr/24+). Participants completed questionnaires measuring risk preference and decision-making. Participants then engaged in a "risky" task, which acted as the dependent measure. Subjects were randomly assigned to complete the questionnaires alone or with two others of the same age group. Younger individuals showed greater risk-taking and seemed to focus on benefits rather than costs in their decision-making. The presence of peers was stronger in younger participants and significantly increased risk-taking and affected their decision-making processes. Youth and emerging adults who were alone demonstrated more mature decision-making (Gardner & Steinberg, 2005). The ability to "tune out" or not be distracted by the presence of others increased with age, but did not stop being an important determinant in behavior. Self-regulation is based on learning and modifying one's actions in order to obtain a goal (Vohs & Baumeister, 2005). As mentioned previously, self-regulation is an integral part of decision-making.

Byrnes (1998) defines decision-making as a functional skill that is critical for adapting to complex social world. Byrnes (1998) created a developmental model of self-regulation and decision-making. He maintains that self-regulation develops with age, and that much of risk-taking is the result of an immature self-regulatory system (Byrnes,

1998, Miller & Byrnes, 2001). The model evolved from other, well-established, models of decision-making such as the Health Belief Model and Theory of Planned Behavior.

Byrnes' (1999) model of decision-making is a four-step process with special consideration of risk-taking. First, goals are set, implicitly or explicitly. Immature decision-makers often have emotional or need-based goals that are not obvious to themselves or others. Many times immature learners deal with the consequences of their actions but do not necessarily think of the initiating goal as a critical part of the process.

The second step is the assessment of options. Byrnes (1999) finds that immature learners tend to see a limited number of options. Given the research covered above, they may *only* see options that seem emotionally rewarding. Emotions heavily bias the first two steps of immature decision-makers. A key strategy at this stage is getting advice from others on possible options; which young or immature learners are less likely to do. They fail to employ social learning in a strategic sense. But assessments of options are implicitly influenced by the presence and decisions of others, namely their peers (Stanton & Burns, 2003; Gardener & Steinberg, 2005).

The third step of Byrnes' decision-making model is the rank ordering of options. Rank-ordering requires forethought of possible costs and consequences for any given option, which is something immature decision-makers have a hard time doing (Irwin & Millstein, 1986; Byrnes, 1999). The benefits weigh heavier in the equation than the costs. The fourth step involves the selection of the highest ranked option. Each step exhibits developmental change with age (Byrnes, 1999). Goals become more complicated and change with age. Watching others in similar situations and asking for advice increases

with age as well. The maturing brain allows for increased capacity to imagine options and a growing sophistication in option selection (Byrnes, 1999). The maturing brain also allows for greater input from the planning and control center. This four-step process is nested with in the individual's values and beliefs, which can impede or facilitate effective decision-making.

Byrnes (1999) holds that values and beliefs drive the decision-making process. Individuals have beliefs about their perceived options. For each option there are beliefs about the option's effectiveness and about the effort involved. Beliefs about decision-making strategies come into play as well. For instance, young learners are not as likely to see advice seeking as helpful (Byrnes, 1999). Values and beliefs guide which options are considered. Successful decision-making happens when beliefs and values about options/strategies are accurate. It is a correspondence between a person's sense of what the options are and what actually is. The learner's perceptions are well calibrated to reality. Learning is the path through which individuals adjust according to their own or other's experiences. Byrnes (1999) maintains that decision-making develops two ways: through feedback and from a person's innate self-regulation. Outcome feedback in its simplest form is recognized failure or success at achieving any given goal, for instance, taking a test without studying at all and then receiving a failing grade. Verbal feedback can be thought of as information provided before decisions are made. Examples of verbal feedback include instructions on how to do something or relevant information that is available prior to engaging in a behavior. Feedback is the means by which a learner calibrates their belief system. Innate self-regulation is a diffuse system based on prior

knowledge/experiences. Prior knowledge biases decisions in overt and/ or subtle ways. Prior knowledge biases, that affect decision-making, change slowly and require multiple failures in order to change. This slow and resistant change in prior understanding is for all ages of learners. Aging and experience allow multiple opportunities for feedback on any given behavior. But it appears that brain maturation affects what information is brought in and which options are selected.

In his work with youth and young adults, Byrnes (1999) found age differences in all four steps of the decision-making model (goals, perceived options, ranking, and selection). Young adolescents failed to use verbal feedback (instructions on how to succeed) at all. Emerging adults seemed to make *limited* use of verbal feedback, and this was after multiple trials. The younger participants demonstrated a more immature learning style. They went from trial-to-trial without making full use of their previous experiences/outcome feedback. Younger participants failed to connect one experience to the next. The young adolescents did not seem to build a working model and apply experiences to the model. The experiences themselves failed to register as relevant and useful for future events. This is a crucial point of potential interventions. Immature learners may benefit from immediate and overt outcome reflection. Despite their maturity in years, emerging adults only utilized outcome feedback after multiple trials. The final results indicated that outcome feedback was superior to verbal/prior information, and that it takes multiple attempts to change behavior, even for emerging adults (Byrnes, 1999). The gradations in decision-making are derived from differences in maturation, personality and experience.

Miller and Byrnes (2001) in two studies investigated competencies associated with self-regulation and decision-making. Younger (14-16 year old) adolescents demonstrated lower decision-making competency than older adolescents (17-18 year old). Older girls showed higher levels of decision-making competency than boys and younger girls. Those valuing social-relational goals demonstrated better decision-making as well. Carver, Ganellen, Froming and Chambers (1983) found that behavioral modeling proved to be an important factor in terms of feedback loops and self-regulation. Observed behaviors seem to be incorporated into existing "conceptual schema" that are then later retrieved and used as reference points or goals for behavior. Participants learned how to behave implicitly, with out conscious registry (Carver et al., 1983). Participants unwittingly made decisions and self-regulated behavior based on social feedback given to other people. This unconscious modeling highlights how self-regulation is a skill that can be learned from others. It also illustrates how social learning can happen with both positive and negative behaviors.

In summary, risk-taking behaviors are common in adolescence and emerging adulthood. Culturally, emerging adults are in a vulnerable time with respect to risk-taking as they have less guiding influence of parents and family, but increased drives to explore themselves and affiliate with peers. Decision-making capacities are challenged by pubertal and cognitive development. Emotions and peer presence are driving forces in adolescent and emerging adult decision-making and risk-taking, while self-regulatory (more specifically emotion regulation) skills are being developed with time and experience. Adolescents and emerging adults build decision-making and self-regulatory

skills in a social context. Parental input and peer groups act as guiding forces, for better or worse.

Adolescent and emerging adult research clearly establishes the power of peers and peer groups as a major influence on risk-taking behaviors (Sternberg, 2004; Arnett, 2005). Groups can also be an important vehicle for learning adaptive social and emotional skills. Yalom (2005) describes a wide range of group types that can lead to learning and behavior change. Group types can be therapeutic, psychoeducational, or training, all of which utilize similar mechanisms. According to Yalom (2005), there are eleven "therapeutic factors" that are in varying levels depending on a group's type. Each of these mechanisms can play a role in the transfer of learning and the changing of behavior. Some of the factors are instillation of hope (feeling like there is hope), universality (others have similar experiences and feelings), altruism (it feels good to help others), corrective recapitulation of the primary family group (we impose the social dynamics of our primary family on groups we are a part of), group cohesiveness (feeling connected to the group), catharsis (feelings of release and relief), and existential factors (meaning or purpose in life).

For the purposes of the present research, which deals with pscyhoeducational groups, the important and active group mechanisms are imparting of information (education or instruction), development of socializing techniques (overt feedback on maladaptive and adaptive social behaviors), imitative behavior (seeing how others handle problems and situations and behaving accordingly), and interpersonal learning (purposefully learning about relationship dynamics and skills through those experienced

in the group). Psychoeducational groups early in formation tend to be more strongly led by a group leader or facilitator. The group leader performs more of the function of imparting important information. In the beginning, the group leader also acts as a positive behavior model.

As group development progresses, the other group members provide more of the information and behavioral modeling. The group leader then takes a more passive role, and may bring the group's attention to positive or adaptive behaviors demonstrated by other group members. Imitative and interpersonal sharing among group members are very important group mechanisms that are sources of learning (Yalom, 2005, De Haan & De Ridder, 2006). For example, an individual may see two group members respectfully and successfully engage in conflict, with the adaptive behaviors being discussed afterwards.

Another example might be when a group member shares feelings of insecurity with the group, thereby displaying vulnerability. Explicit and corrective feedback regarding social skills, whether it is from the group leader or from a peer in the group, is seen as a crucial for learning (Byrnes, 1999; De Haan & De Ridder, 2006). Group members may notice that an individual is defensive and repeatedly interrupts while others are speaking. One group member may politely ask if the person ever realized that they did this, thus calling attention to the behavior. If the person responds with denial, others in the group can support both by agreeing that it does happen, but also that it is sometimes hard to hear constructive criticism.

The social interactions that take place in a group also act as implicit sources of learning about communication and behavior (Carver et al., 1983). Group members who watch the confrontation described above may then pay attention to whether or not they interrupt, and they may take away a successful model for behavior-focused confrontation. While one-on-one feedback can be instructive, it does not impart the level nor complexity seen in group dynamics and processing; groups can be a unique tool or mechanism for behavior change (Yalom, 2005, De Haan & De Ridder, 2006). Given that socio-emotional development is taking place in adolescence and emerging adulthood, groups should be a key element utilized when designing interventions.

Many risk-taking interventions are predominantly passive, lecture-styled education. In passive lectures there is no direct and personal outcome feedback (Byrnes, 1999). The opportunity for direct and personal feedback seen in psychoeducational groups is exactly the kind of applied and engaged learning recommended by Kirby (2001) in his review of interventions. Understanding the learning needs of adolescents and emerging adults, and harnessing known forces, is essential to addressing risk-taking behaviors. Learning theory has much to offer interventions designed to address risk-taking behaviors.

Experiential Learning

Experiential learning (EL) methods are one type of teaching style that takes full advantage of immediate and dynamic outcome feedback. Much of EL also centers on experiences that are debriefed and discussed in a group format. Three main historical figures provide the foundation for EL Theory: Paulo Freire, John Dewey and Jean Piaget

(Kolb, 1984). Understanding each contribution builds a solid grasp of experiential education. Paulo Freire's perspective on teaching and knowledge is one of the main guiding forces of EL. When discussing the education of teachers, Freire (1998) defined different types of knowledge. He held some to be essential in "progressive education." Friere talked of teachers as agents who are active in the production of knowledge. The notion of knowledge *transfer* is denounced in favor of creating an environment in which knowledge can be *constructed* (Freire, 1998). Freire went on to discount passive reception of knowledge and depicts teachers and students as constantly reformed by the education process. One cannot teach without learning-the roles are not static entities. He sternly dismissed the "banking" approach to knowledge gain, where students are passive receptacles ready to receive information deposited by teachers in a one-way encounter (Freire, 1998). Yet much of education follows this format, still to this day.

John Dewey is widely credited as a founder and advocate of experiential education. As a social constructivist, he viewed learning as a transaction inextricably negotiated in a social context (Roberts, 2003). Within this social context, teachers act to organize and facilitate knowledge transfer according to a student's readiness. Dewey would hold that the social environment is the natural source of all learning and that the architecture of traditional learning environments is more than artificial, it inhibits the social learning process (Roberts, 2003). He describes the necessity of interaction between mature and immature learners-bringing to mind Vygotsky's (Wertsch, 1991) scaffolding and zone of proximal development. Dewey puts forth that the pre-packaged knowledge of traditional education is based on assumptions of potential use. This is an unnatural

approach to learning-he supports the notion of knowledge as arising from opportunities built into a social being's environment. Knowledge is gained from experiences that can be built upon and applied (Roberts, 2003). Dewey held that abstracted pieces of knowledge in compartmentalized units are harder to grasp and use. Learners need context, scaffolding. He would claim that learning should take place in dynamic and real situations. This is where the social world and teachers come in. Dewey removes teachers from the hierarchical structure of traditional education. Instead he places them in the role of facilitator, bridging the gap between their prior knowledge and that, which is new (Roberts, 2003). Learners may vary in their readiness and capacity, but an appropriate social context would provide opportunities for them to *lead* each other (eg., tutoring). The intimate connection between these forces (teacher, content, and social context) and a learner's personal experiences is critical to learning (Roberts, 2003). Without relevance, knowledge is a test of the learner's storing capacity. Storing capacity is less when information is not scaffolded into prior knowledge. Experiences shape our knowledge and this in turn shapes future experiences.

David A. Kolb's (1984) contemporary experiential learning theory is an assimilation of works by Paulo Freire, John Dewey, Kurt Lewin, and Jean Piaget. Kurt Lewin is given credit for his conceptions of learning as a process, not a product, of discovery (Kolb, 1984). To Kolb, Jean Piaget's theory of cognitive development is a vital fixture in EL. Piaget's view of intelligence as shaped by experience (a complicated interaction of person and environment) is an obvious feature in Kolb's theory. Capacities expand through their engagement with the environment. With age the mental

representation of the world becomes more complex and abstract, but knowledge is ultimately born of concrete experiences (Kolb, 1984).

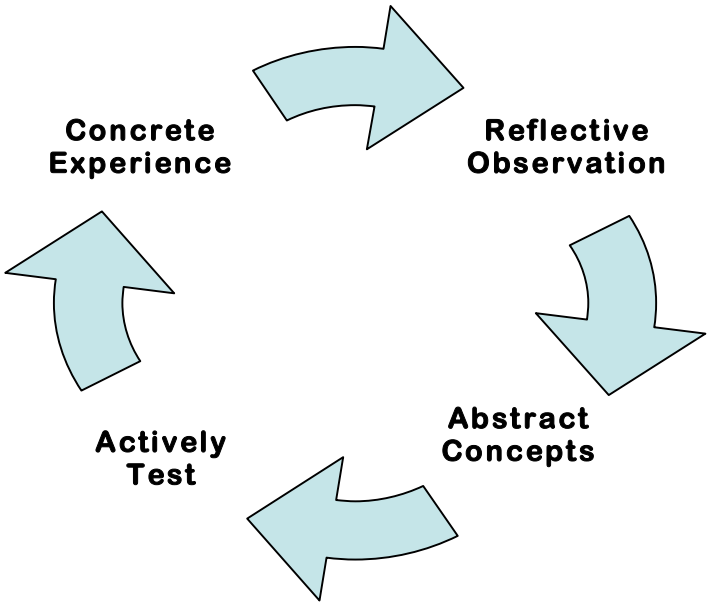
The theory of EL proposes a cycle of development (see Figure 3). It involves movements between two dialectical dimensions: active experimentation/reflective observation and concrete experience/abstract conceptualization. Learners move through these dimensions in a cyclic fashion (Baker, Jensen, Kolb, 2002; Kolb, 1984). The theory emphasizes the central role that experience plays in the learning process. Individuals receive information from concrete experiences and abstract conceptualizations. Information is then processed through reflective observations and active experimentation. It is a cyclic process where concrete experiences form the basis of reflections and observations. These reflections are then turned into abstract concepts from which new implications for action can be drawn. These implications can be actively tested and serve as guides in creating new experiences. Other individuals play an important part in this process.

Joplin (1981) provides a stable rendition of the role of teachers/facilitators in experiential education. Joplin's explanation outlines five stages: focus, action, support, feedback, and debriefing. Facilitators are given stewardship of these stages. They are given responsibility for guiding others through the process, but are not given the job of directing exactly what the participants learn. Facilitators focus attention on the task, create boundaries for actions, and give support and specific feedback in order to maintain continuity of the experience. Finally, they scaffold the debriefing of the experience so as to create opportunities for insight and learning (Joplin, 1981).

The debriefing essentially becomes a source of outcome feedback provided by the facilitator and other group members.

Experiential learning goes by many names. Sometimes experiential education is used. Adventure-based learning or education falls under the rubric of EL as well, but usually involves outdoor activities and elements. A high element activity entails climbing and use of a harness and/or belay system. A belay system is a safety system where several harnessed group members hold the belay rope for another harnessed climber. While some low element activities involve standing on telephone poles a few inches high, all involve some type of group-based problem-solving. With respect to learning, the group-based debriefings that take place after EL activities are considered to be psychoeducational in function and can engage the therapeutic mechanisms discussed earlier (Yalom, 2005). The importance and power of the group element is a highlight and strength of EL methodologies. Experiential learning has been applied in several different ways.

Figure 3. Experiential Learning Cycle



One way that EL has been consistently used is in communication skills training. Dorsey, Miller and Scherer's (1999) research describes communication as a key part of risk taking and risk perceptions. Hulsman, Ros, Winnubst and Bensing (1999) in their review of the literature found using experiential education of communication skills to be an essential and productive part of medical training. Wolfe and Dattilo (2006) studied medical students' perceptions of communication during and after a one-day EL outdoor event. The participants engaged in low (no harness) and high (harnessed) element activities. Wolfe and Dattilo's (2006) program followed a typical experiential education paradigm including group activity followed by reflection. Post session interviews were conducted three days later and then six weeks later. Participants all felt that the low element activities dealt directly with issues surrounding communication skills (Wolfe & Dattilo, 2006). Upon completion of the program, participants reported increased awareness of elements that facilitate and hamper communication. Most reported feeling that their skills seemed to develop as the program progressed. Hatch and McCarthy (2005) found that a single experiential education session program for college-aged individuals led to gains in personal effectiveness in a group context. The studies above demonstrate how even one session of EL activities can result in gains in awareness and skills.

Experiential learning also works well as a pedagogy that creates awareness of the self (Tritt, 1991). It does this by providing opportunities to reflect on experiences and to see how others with different perspectives reflect on the same encounter. Through the group encounters, individuals get a chance to focus on the major aspects of their

relationships with themselves and with others (ex. trust, respect, communication). Experiential education allows for stimulation of multiple learning modalities (kinesthetic as well as intellectual/abstract) and facilitates a refining of meaning. The process supports elaboration, an expansion on prior knowledge/understanding, and builds upon the experiences of the self and of others in a dynamic way (Tritt, 1991). Again, the merits of experiential education sessions are in the form of overt outcome feedback received about the self and others.

There are two key things that take place when individuals begin to build a concept of self as a learner. First, they recognize that *they* are choosing and selecting what they learn. They move beyond the assumptions that they just receive information. The second realization is that there are other ways of approaching learning and other perspectives that may be chosen. These metacognitions are difficult concepts and may take multiple experiences to completely grasp (Tritt, 1991). Understanding how we see the world is critical if we are to see that other possibilities exist. Immature learners think that their perspective is the *only* perspective. Experiences in life show them that others may see things differently. Self-concept and cognitions about the self are an essential part of negative and positive risk-taking. Experiential learning has particular utility in helping individuals raise awareness of themselves and of others (Tritt, 1991).

Finkenberg, Shows and DiNucci (1994) studied whether a semester-long EL class was able to create changes in college students' self-concept. They compared the EL students' total and subscale scores on the Tennessee Self-Concept Scale (TSS) to those of students enrolled in a traditional college health class. Globally, the TSS is purported to

measure a person's perspective of himself or herself. The results of the pre-post semester assessments showed significant differences between the two groups for the global scale and for subscale scores. Those in the EL group showed improved ratings of their overall self-concept in comparison to the other group post intervention. The EL group showed specific gains in the areas of the physical self (their thoughts about their body, health appearance, and sexuality) personal self (feelings of worth and value), social self (sense of social competence), and behavior (perceptions of one's own actions) (Finkenberg et al., 1994). Such studies provide evidence that EL would be promising as a risk reduction pedagogy.

Experiential learning provides greater emotional engagement than traditional, didactic, educational sessions. As mentioned above, adolescent decision-making is challenged by the presence of peers. Experiential learning is being explored as a methodology because it seems to allow for dynamic modeling and discussion of effective skills in a peer group environment. High element activities are proposed to be particularly useful because participants experience intense emotions similar to those involved in risk-taking behaviors. My experience as a facilitator working with groups has shown that EL games and high element activities reliably bring up emotions of all sorts, from frustration, boredom, and embarrassment to extreme excitement and pride. These are similar emotions involved in risk-taking. The high elements are particularly useful at creating big emotions. Fear of heights is one of the most common phobias with a prevalence ranging from 35-40% of individuals reporting some level of fear (Fredrikson, Annas, Fischer, and Wik, 1996). Participants vary in their emotional responses, but in general the high

elements elicit a mild to intense anxiety/threat response. But these high elements take place in a managed learning environment. Immediate debriefings prompt personal reflections of the experience. These reflections are given fuller dimension by direct outcome feedback and alternative perspectives provided by the facilitator and peers.

The group dynamic is a critical part of the EL paradigm. However, the role that group dynamics (specifically group cohesion) play as an element in the intervention is unknown. Group cohesion can be thought of as the positive and negative "forces" perceived by each individual as well as the degree of group membership each feels (Toropainen & Rinne, 1998). There is research that shows group cohesion can positively affect the efficacy of goal-directed interventions (Hery, Krnet, Desrosiers & Landa, 2002; Toropainen & Rinne, 1998). Estabrooks and Carron (1999) found that group cohesion had a significant impact on the effectiveness of a physical activity intervention. Those in high cohesion groups had higher return rates and better follow-up. But Caperchione and Mummer's (2006) research on physical activity and group cohesion failed to find a significant relationship. In fact, it was discovered that when group cohesion declined over the study period, it had no effect on the intervention at all (Caperchione & Mummer, 2006). This aspect of EL is no doubt worthy of a whole other line of research. In this study, it is recognized as a potentially important variable to take into consideration. Given that group cohesion may have some impact on the efficacy of the intervention, it was measured and treated as a covariate.

To date, very little evaluation of EL methods has been conducted relating to self-regulatory skills and risk-taking. A literature search was performed to determine if EL

has been used to address emotion regulation skills. No research was evident regarding experiential learning and emotion regulation. There was some research, however, on experiential therapy and emotion processing (Klonz, Wolf & Bivens, 2001). Experiential therapy appears to have some of the same attributes as EL in that it involves the use of immediate experiences and metaphors to process and create meaning relevant for day-to-day living. Much of risk-taking happens in a group context (Steinberg, 2004). The reason for using EL is that it can be used to actively elicit emotions in a group-based context. I propose that the type and degree of emotion dysregulation that happens in risk-taking situations is replicated in high element activities and to a lesser degree in the social setting of low element games. The arousing nature (e.g., increased heart rate) of these activities creates a physical element that is essential to process and deal with. The emotional element connects to the other critical aspect of EL, which is the immediate outcome feedback that happens in the group-based post activity debriefings.

One of the potential benefits of EL is that the debriefings focus participants on recognizing and expressing their emotions. Another potential benefit is that successful and unsuccessful emotion regulation behaviors and strategies can be discussed using the just completed experience as a source. Another benefit of this methodology is that overt connections between emotions and risk-taking can be applied to participants' lives and future decisions. In essence the emotional aspects of experiential learning activities mimic those of risk-taking, but in a setting where the experience and dynamics can be discussed and processed in a facilitator led group context. These activities provide in

context learning opportunities that can then be purposefully deconstructed through debriefings.

The purpose of the present exploratory study was to assess an intervention that centers on emotion-regulation skills associated with risk-taking behaviors. This study is the first to establish whether or not EL is an effective means for teaching skills related to emotion-regulation and risk-taking behaviors. If successful, this methodology could replace or enhance underperforming, knowledge-based curricula commonly used to address risk-taking behaviors. This study improves upon previous EL studies by having more than one session, but did not require extended commitments of time such as happens in semester-long courses.

Statement of Research Questions, Hypotheses, & Rationale

Research Question 1. Do participants receiving the EL intervention show improvement in the self-report assessment of emotion regulation skills, compared to the control group participants who receive a power point presentation on risk-taking and emotion regulation?

Hypothesis 1. Experimental group participants, but not control group, will show a significant decrease in their perceived difficulty with managing negative emotions.

Research Question 2. Do participants receiving the EL intervention show a decline in risk-taking behaviors, compared to the control group?

Hypothesis 2. Experimental group participants, but not control group, will show a significant decrease in their risk-taking behaviors from pre (time 1) to follow-up assessment (time 4).

Research Question 3. How do participants connect emotions and risk-taking?

Hypothesis 3a. Participants will have nascent theories about a relationship between emotions and risk-taking and the experimental will report a deepening in this understanding post-intervention.

Hypothesis 3b. Do the experiential learning activities elicit a range of intense emotions?

Chapter III: Methods

A mixed-methods pre-mid-post design was used to examine the study hypotheses. Pre-assessment of attitudes, knowledge, and skills related to self-regulation and risk-taking were obtained. All participants received emotion regulation and risk-taking curricula delivered by me as the facilitator/lecturer. As such, both groups then received the same curricula from the same presenter; but different methodologies (experiential learning and traditional didactic) were used to deliver the materials. Participants in the experimental condition participated in two separate experiential education sessions dealing with risk-taking and emotion regulation. Control group participants were given two brief power point lectures covering the same risk-taking and emotion-regulation materials. Mid-assessment measures were completed approximately three to four days before the second session (for both groups). Follow-up assessments were completed approximately one week following both (experimental and control) groups' second session. The sequence of events is presented in Table 1.

Participants

Emerging adults attending a large southern state university ranging in age from 18-21 participated in the study. Students were recruited from health education and psychology courses and from university dormitories. Recruiting began in the fall and resulted in a total of 75 potential participants five months later. Availability on the same day at the same time for two separate sessions proved difficult for many. Of the 75 interested individuals, 31 participated in the study. Complete data were collected for 28 participants in both the experimental and control conditions.

Efforts were made to create groups of at least 15 participants. Schedule conflicts were most often cited for inability to participate. Creating groups of even ten individuals was difficult and never occurred. The challenge course was only available for use on particular days in the winter and spring. Given the difficulty with recruiting, a decision was made to focus on obtaining as many participants for the experimental condition as possible. Schedule availability then dictated which condition participants were assigned- those available and able to meet on challenge course days were then "assigned" to the experimental condition. Thus random assignment to conditions was not achieved.

Schedule availability resulted in two experimental groups. There were seven individuals in one group from a child, adolescent, and adult health class and six in another group of individuals living together in the a dormitory on campus. A total of thirteen individuals participated in the experimental condition, of which 11 were women and two were men. Again, scheduling issues caused one group to have a week and half between session 1 and session 2, while the other experimental group had a three week time period between the sessions. This resulted in different periods of time between the pre and mid assessments for the two experimental groups.

Recruiting for the control condition in the summer was easier. This may have been because the control condition sessions were shorter and held on campus, where as the experimental condition involved traveling some distance to the challenge course and a commitment of three to four hours. Participants in the control condition were enrolled in a child, adolescent, and adult health class. There was one group in the control condition. A total of 15 individuals participated in the control condition; 13 were women and two

were men. Their two sessions were separated by exactly one week. Two individuals in the control condition either could not make it to the second session or didn't complete the final post assessment. Both the experimental and control groups were able to complete follow-up assessments one week following the second session.

Procedure

The intervention involved two sessions for both experimental and control groups. The one control group received two 1.5-hour power point presentations covering the intervention curricula. These sessions were spaced approximately one week apart and took place in a classroom. Table 1 shows the sequence of study events.

The two experimental groups had two 3.5 hour sessions covering the same intervention curricula as the control group but used experiential learning techniques. As mentioned before, the experimental groups had varying times in between their first and second sessions. The first experimental group session was a mixture of low and high element activities and took place at the Cedar Parks Twin Lakes challenge course. Low element activities are games and initiatives that do not involve climbing. High element activities involve use of harness and belay systems and included tasks ranging from 1 foot to 40 feet off the ground. The second experimental session took place in a classroom and involved low element activities-no climbing, mostly problem solving games. More detailed descriptions of the sessions can be found below.

Control Group. Participants in the control group were asked to meet with me in a classroom on two occasions for power point presentations that lasted approximately 1.5 hours each.

1st Session. Consent forms were collected at the beginning of the session. Then, the emotion regulation and risk-taking assessments were administered (Time 1). After this, a power point lecture covering key emotion-regulation and risk-taking concepts (see Appendix C for key concepts) was given. Participants were allowed to ask questions for clarification and then released.

Four days prior to the second session, mid-assessments (Time 2) of difficulty with emotion regulation and risk-taking behaviors were e-mailed to participants via Survey Monkey (see Measures for a description).

2nd Session. The second session took place exactly one week after the first. Participants were shown another power point presentation on emotion-regulation and risk-taking concepts followed by questions for clarification (see Appendix C for session details). Approximately one week following the second session, the follow-up assessment (Time 3) of difficulty with emotion regulation and risk-taking assessment was delivered via Survey Monkey.

Experimental Group. Participants in the experimental condition were asked to meet with me on two occasions for approximately 3-4 hours each time.

1st Session. The first experimental group session took place on a challenge course (see below for details about the site) and involved a mixture of low and high-element activities. Participants first completed and submitted their consent forms. Pre-assessments of difficulty with emotion regulation and risk-taking (Time 1) and qualitative items were then completed. The session began with a "group juggle" activity led by the facilitator. Participants were instructed to give their name and a one-word emotion that described

Table 1. Sequence of Study Events for Experimental and Control Participants

Assessment Period	Time 1	Time 2		Time 3
Experimental Group	Pre-Assessment: Difficulty with Emotion Regulation Risk-Taking	Mid-Assessment: Difficulty with Emotion Regulation Risk-Taking		Follow-Up Assessment: Difficulty with Emotion Regulation Risk-Taking
	Session1 Intervention		Session 2 Intervention	
Control Group	Pre-Assessment: Difficulty with Emotion Regulation Risk-Taking	Mid-Assessment: Difficulty with Emotion Regulation Risk-Taking		Follow-Up Assessment: Difficulty with Emotion Regulation Risk-Taking
	Session1 Curriculum		Session 2 Curriculum	

how they felt at that moment. They were asked to throw a rubber chicken around the circle such that each person held it once and the item ended with the facilitator. Once all had been introduced, the group was challenged to throw the item in the same order, with correct names and emotions called out before a toss. The group chose a challenge time for how fast they felt they could this with as few drops as possible. Once the group achieved "success" the activity was briefly discussed. Participants were asked to focus on their feelings when describing what happened. The group then participated in a "check-in", where each person was asked to report their mental and physical status. For example they were asked to rate how well they were feeling mentally on a scale of 1 to 10. They were also asked to rate how well they are doing physically on a scale of 1 to 10. They were asked to let the group know if they had any specific injuries or emotional considerations that they would like to share.

The check-in activity helped the group know how each member was feeling and to take this into consideration when interacting during the games. For instance, one group member mentioned that she was feeling stressed and distracted by her up coming exams. I then pointed out that the rest of group, knowing this ahead of time, could be mindful of this when interacting with her. Check-in is one of the curricular elements relating to emotion regulation. It establishes a tone and temperament for the group. Group members sharing their mood and feelings sets the stage for sharing and trust later in the activities. Check-in's allow for important emotions to be shared ahead of time, and reduces their likelihood of "popping-up" later on. Following the check-in, I discussed plans for the day and led a brief lecture and discussion about how emotions and fundamental needs are tied

to risk-taking (see Appendix D). Experiences from the group juggle were used as an anchor to tie in points of the lecture. For instance, many participants had a hard time choosing a word to describe how they felt. This led into a discussion about how hard it can be to label and share emotions. This difficulty might be because the individual doesn't have a large emotion vocabulary or maybe because their family or social world doesn't discuss such emotions. Then the lecture moved on to the purpose of such emotions (acting as a barometer for goals or needs). This then segued into a discussion of fundamental "needs and nots" that underlie emotions. See Appendix D to view the curricula.

The importance of emotional awareness was discussed and assigned as a goal for the group to practice in the activities. Other skills were highlighted as well; including sensing emotions in others, how emotions motivate/affect behavior, and expressing emotions in a group medium. For example, participants were told about "I speak" as an important technique that encourages awareness and ownership of ideas/feelings. The participants were encouraged to use "I speak" when planning and discussing ideas and emotions in the initiatives/games and debriefings. Other critical skills discussed were active listening and paraphrasing. Participants were asked to report their emotions after each game/activity in a booklet. Activity debriefings were conducted after the emotion checklist was completed. These debriefings followed a standard format. Three main questions were asked regarding each initiative: 1) "What just happened: describe your emotional experience?" 2) "What did this experience mean to you?" 3) "How can you apply your experience to your life?" I made sure to elicit discussion on the process of

decision-making and the role of emotion regulation skills during each debriefing. For example, several participants talked about being very scared or anxious but they "did it anyway" or "did for my partner". We discussed the purpose of fear/alarm emotions. Then we talked about how these important emotional messages were being over ridden by a desire to help or please others (not let their friend down). A connection was then made to how similar this sequence is to risk-taking events. At this point I discussed the importance of labeling and validating "negative emotions".

Participants engaged in the following sequence of three games/activities. First, they did an activity called "Wind in the Willows", which is a trust activity. In this game, all participants stand in a shoulder-close circle, while one individual stands in the center. This person closes their eyes, puts their feet together, and then folds their arms up. The group then puts their hands on the person in support. The person is then "passed" around the circle. If their feet come apart they've "broken" the trust. As soon as all participants had the chance to be in the center, all were asked to complete the first emotion checklist. After completing the checklist a debriefing was conducted. This was followed by the second activity, a high element called "Wild and Woozy". High-element activities involved harnessed participants who climbed elements approximately 20-30 feet off the ground, and were roped into a belay system manned by other group participants. Participants were first instructed on the harness and belay system. They then chose a partner. Each of these partner sets were then (one pair at a time, belayed by the other group member) asked to climb up to a platform juncture of a "V" formed by two large telephone polls 25 feet high. The pair was challenged to stand, one on each log, and

"steeple" their hands together while slowly side stepping along their progressively widening logs. Success required individuals to lean in and trust one another. At some point they had to fall (supported by the belay team). Immediately following, the pair were asked to complete the second emotion checklist. Once the whole group had gone, a group debriefing took place. The major theme explored was the role of emotions in this risk-taking activity and how the presence of others affected their decisions.

The third activity was also a high element that involved each pair of participants climbing, in tandem, up cargo netting that reaches a height of 40 feet. Upon completion each pair filled out the third emotion checklist. A group debriefing took place after all pairs completed the task and checklist. A mid assessment, including emotion regulation and risk-taking motivations, was sent to participants electronically, via Survey Monkey, one to three weeks following their participation in the session. For both groups in the experimental condition, the mid-assessment (Time 2) of difficulty with emotion regulation and risk-taking behaviors was delivered via Survey Monkey approximately four days prior to the second session.

2nd Session. The second session was approximately 3-4 hours long. I began by sharing the goals for the session: to explore in more depth how emotions are tied to risk-taking. A group check-in was then conducted. Participants were given a review of the key concepts covered from the first session and then engaged in three activities (see Appendix D). The session began with a warm-up game called human know. The "Human Knot" warm-up game was used to get the group performing together as a unit. The first emotion checklist for this session was filled out following this activity. A brief lecture

was then given about emotions reflect needs. For example, the need to belong was discussed and how loneliness can be a negative emotion tied to this need. Loneliness was then talked about as a possible motivation for engaging in risky behaviors. A quick review of the first session's curricula was also provided. The group then discussed emotions in risk-taking and how the presence of others affects this. Participants discussed these themes in light of their experiences in the first session and made connections to risk-taking in their lives. The second game/activity was then introduced.

The game was called "Needs & Nots." It deals with values and challenges that often facilitate risk-taking. Participants were asked to form "two halves of a whole" (separate into 2 groups) behind a line. In front of them (most of the distance of a large room) were several balls and other soft "throwable" items scattered about. At the other end of the room was a circle of rope. Inside this circle were pieces of paper with "needs" (belonging, fun, power, freedom) and "nots" (loneliness, boredom, frustration, helplessness) printed on them. The goal for each group was to get as many of their needs met as possible. The limitations were that only one person from each half could enter the "field of life" at any time. They had to choose to pick up an obstacle (soft nerf ball) or a "need/not". If they got an obstacle they had to take it back to the group. The group could then throw the obstacle at the other team's member in the field. If they hit them, any object carried (obstacle/need-not) had to be dropped or put back. The group was given 10 minutes to meet their needs. Once the game was done, all were asked to fill out the second emotion checklist and then join in a group debriefing. The themes of how we meet our needs, the strength of emotions, the role of others, assumptions and such were

explored. For instance, the two sides assumed that they could not collaborate with one another. We discussed the role that assumptions can play in our everyday lives. A key example was how neither group was mindful or purposeful about meeting their needs. They were distracted by the competition and ended up being very opportunistic (just grabbed whatever was closest). We talked about how this is similar to life and risk-taking in that it is easy to not be purposeful about meeting one's need to belong and just wait for social opportunities to happen, even if they are risky.

The third and final game was "Minefield". In this game participants were asked to pair-up. One member chose to be "sighted" while the other had a bandana placed over their eyes and was asked to take off their shoes. They both then stood behind a rope/line. In front of them was a minefield of randomly spaced mouse-traps (which were set). The goal was for the sighted person to talk the unsighted person to the other side of the room, through the minefield. This game requires a lot of communication and trust. After all pairs had completed the task, they were asked to fill out the third and final emotion checklist. This activity was debriefed and explored the assumptions and trust involved in risk-taking with others. The role of coping with strong emotions with others was discussed as well. A follow-up assessment (Time 3) was sent via Survey Monkey, approximately one week following the last event.

Measures

Difficulty with Emotion Regulation. Gratz and Roemer (2004) created a 36-item measure called the Difficulties in Emotion Regulation Scale (DERS). Each of the 36-items has the following response options: 1 'almost never (0-10% of the time)', 2

'sometimes (11-35% of the time)', 3 'about half the time (36-65% of the time)', 4 'most of the time (66-90% of the time)', 5 'almost always (91-100% of the time)'. The DERS is comprised of 6 dimensions or subscales: 1) Nonacceptance of emotional response ("When I'm upset, I feel like I am weak"); 2) Difficulties engaging in goal-directed behavior ("When I'm upset, I have difficulty concentrating"); 3) Impulse control difficulties ("When I'm upset, I loose control of my behavior"); 4) Lack of emotional awareness ("I pay attention to how I feel"); 5) Limited access to emotion regulation ("When I'm upset, it takes me a long time to feel better"); 6) Lack of emotional clarity ("I am clear about my feelings"). The scale has demonstrated high internal consistency in a college-aged population with Cronbach's $\propto$ = .93; and each of the subscales has Cronbach's $\propto$ >.80. The DERS also demonstrated good convergent validity when measured with a standard scale used for emotion regulation, the Generalized Expectancy for Negative Mood Regulation Scale (NMR; Catanzaro & Mearns, 1990). The DERS also showed significant and expected relationships with the Acceptance and Action Questionnaire (AAQ; Hayes et al., 2004) and the Emotional Expressivity Scale (EES; Kring, Smith & Neale, 1994). The DERS scale scores showed greater predictive validity than the NMR (Catanzaro & Mearns, 1990).

The DERS was assessed at all three time points. All of the DERS items were scored in a positive direction (reverse scoring negative items). An average total scale score (one for each of the three waves of data) was created as a dependent measure of difficulty with negative emotion regulation. High DERS scores indicate a high level of difficulty; where as lower DERS scores indicate less difficulty with emotion regulation.

The DERS was assessed at all three time points. Chronbach's alpha was computed for the pre assessment ($\propto$ = .624), mid assessment ($\propto$ = .530), and post assessment ($\propto$ = .679).

Risk-Taking. Frequencies for 14 risk behaviors were self-assessed at all three time points. Pre-treatment reports of risk-taking behavior (number of times engaged in the behavior in the past 30 days) were converted to a daily proportion (frequency of behavior/30 days). For example, a person may have reported engaging in one of the 14 behaviors 5 times in the last 30 days. This would result in a daily proportion score of .17, which conceptually equates to the person engaging in the behavior about every 10 days. Mid-assessment and follow-up reports of risk-taking (number of times engaged in the behavior in the last seven days) were converted to daily proportions as well (frequency of behavior/7 days). For example, a person may have reported engaging in a behavior three times in the last seven days. This becomes a daily proportion (3/7) of .43, which equates to engaging in the behavior about every four days or so. A total risk score was then computed by adding the computed proportions for each behavior and resulted in an aggregate risk behavior score for each time point.

Cohesion. Group cohesion was assessed, at pre-assessment for all groups, with a six-item scale by Bollen and Hoyle (1990). All items are answered on a Lickert scale ranging from 0 ('strongly disagree') to 10 ('strongly agree'). The name of the group is placed in the first four item stems. Items fall into one of two categories. The sense of belonging category has the following three items: 1) "I feel a sense of belonging to this group", 2) "I feel that I am a member of this group", 3)" I see myself as part of this group". The feelings of morale category has the following three items: 4) "I am

enthusiastic about being here", 5)"I am happy to be at this session", 6) "This is one of the best groups in the school." This scale has shown high reliability in college populations with Cronbach's alphas ranging from $\propto$ = .93 to .97 (Hatch & McCarthy, 2003). Chronbach's alpha computed for the pre-assesment measurement of cohesion, was $\propto$ = .810.

Emotion Checklist. Eliciting emotions is an important goal of the experimental condition. A review of the literature was conducted to find an emotion assessment that could be used in the intervention to provide insight into the curriculum and detect effects of the methodology. No appropriate measurement tool that was found. As such, a basic instrument was created to provide information about participants' emotions. Experimental group participants were provided with a booklet and asked to report their emotions after each game/activity. These assessments took place following each of the three activities in the experimental groups' sessions 1 and 2. The booklets contained a list of emotions and intensity ratings for each emotion . These post-activity assessments (three per session) created six total post-activity assessments of participants' emotions.

Qualitative Measures

Open-ended items were created to address the third research question regarding participants' nascent theories on how emotions and risk-taking are connected. Both control and experimental participants were given the following items before exposure to the curriculum/intervention, "For the question below think of negative risk-taking as behaviors that may have positive outcomes but involve potential for harm (mental or physical) to the self as well. Ex. binge drinking, driving while intoxicated, sex without

condoms. Given this definition, please explain in what ways you think emotions are connected to risk-taking." A post-assessment item examined what experimental group participants' learned. Experimental group participants were asked, "In the space below please describe what you learned from sessions 1 and 2."

Chapter IV: Results

Prior to examining study hypotheses, descriptive statistics were computed for all study variables across time and between groups (see Table 2). In order to show a clear picture of participant risk-taking behaviors across assessment points, Table 3 shows the participant percentage endorsement for each of the 14 risk-taking behaviors. As expected, frequencies were higher at Time 1 because they were reports over 30 days as opposed to 7. Participants engaged in a variety of risk-taking behaviors, with the most frequent being use of alcohol and the least frequent being use of ecstasy (see Table 3).

Zero ordered correlations were computed for study variables (see Table 4). As would be expected, the three time point assessments of difficulty with emotion regulation were significantly and positively correlated. The same is true for the three assessments of risk-taking behavior (see Table 4). Unexpectedly, there were some significant *negative* correlations between difficulty with emotion regulation and risk-taking behaviors. Time 1 assessment of risk-taking was negatively correlated with the Time 3 assessment of difficulty with emotion regulation, indicating that those with low levels of risk-taking behaviors at the pre-assessment reported higher levels of difficulty with emotion regulation at Time 3. Time 2 assessment of risk-taking was negatively correlated with both the Time 2 and Time 3 assessment of difficulty with emotion regulation. Participants reporting high levels of risk-taking at the mid assessment tended to report less difficulty with emotion regulation at mid-assessment and then again at follow-up (see Table 4). Moreover, Time 3 assessments for risk-taking and difficulty with emotion regulation

Table 2. Control and Experimental Group Descriptive Statistics: Cohesion, Difficulty with Emotion Regulation & Risk-Taking Across Time

	Time	Cohesion		Difficulty with Emotion Regulation			Risk-Taking		
		m	SD	m	SD	range	m	SD	range
All	1	7.51	1.34	2.68	.256	1	.2678	.300	1.27
	2			2.63	.209	1	.4381	.579	2.29
	3			2.62	.243	1	.4524	.695	2.43
Control [a]	1	7.58	1.10	2.635	.289	1	.369	.340	1.27
	2	-	-	2.585	.232	1	.613	.673	2.29
	3	-	-	2.585	.259	1	.697	.818	2.43
Experimental [b]	1	7.41	1.63	2.749	.199	1	.136	.173	.57
	2	-	-	2.678	.168	1	.209	.322	.86
	3	-	-	2.668	.221	1	.132	.276	1.0

[a] $n = 16$ [b] $n = 13$

Table 3. Difficulty with Emotion Regulation and Risk-Taking Correlation Matrix (N = 28)

	1.	2.	3.	4.	5.
1. T1 Difficulty with Emotion Regulation	-				
2. T2 Difficulty with Emotion Regulation	**.860****	-			
3. T3 Difficulty with Emotion Regulation	**.783****	**.744****	-		
4. T1 Risk-Taking	-.253	-.303	**-.389***	-	
5. T2 Risk-Taking	-.241	**-.373***	**-.382***	**.784****	-
6. T3 Risk-Taking	-.196	-.328	**-.372***	**.827****	**.888****

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

were negatively correlated with one another, indicating that as reports of one increased, instances of the other decreased (see Table 4).

Next, analyses were conducted to examine pre-assessment differences between the control and experimental groups on level of group cohesion. Differences in perceived cohesion could have affected the intervention efficacy (Hery, Krnet, Desrosiers & Landa, 2002; Toropainen & Rinne, 1998). If one group had lower levels of cohesion, the participants' receptiveness to the sensitive nature of the curriculum and methodology could be affected. Participants' willingness to participate fully might be hampered (Toropainen & Rinne, 1998) and as such could affect study results (showing no changes). Alternatively, a group with high cohesion might exert more peer pressure implicitly or explicitly. A highly cohesive group may also engender more trust, which could lead to more expression and acceptance for group members' experiences (Hery, Krnet, Desrosiers & Landa, 2002). A one-way analysis of variance (ANOVA) was computed to test for pre-assessment differences between the control and experimental groups with respect to cohesion. The one-way ANOVA showed that perceived cohesion between the groups was not significantly [$F(1,28) = .126$, $p = .725$] different and was therefore removed from further analyses (see Table 5 for group means).

Hypothesis Testing

The first research question addressed the effects of the EL intervention on the experimental groups' emotion regulation skills compared to the control group.

Hypothesis 1. Compared to control group participants,76 experimental group participants will show a significant *decrease* in difficulty with emotion regulation.

Table 4. Percent of Participants Endorsing each of 14 Risk-Taking Behaviors Across Time (N = 28)

	Percent Endorsed		
Risk Behavior	**Time 1[a]**	**Time 2[b]**	**Time 3[b]**
Ridden in car driven by other (who had been drinking alcohol)	46.6	26.7	13.3
Drove after drinking alcohol	30	6.7	13.3
Carried a Weapon	16.7	10	10
Been in a physical fight	3.3	0	3.3
Been hit, slapped, or physically hurt on purpose by other	3.3	0	0
Smoked at least one cigarette	20	16.7	13.3
Had at least one drink of alcohol	70	46.6	46.6
Had 5 or more alcoholic drinks in a row	56.7	33.3	29.9
Have used marijuana	10	9.9	6.6
Have used any form of cocaine	0	6.7	0
Have used a hallucinogenic drug	3.3	0	0
Have used ecstasy	0	0	0
Did NOT use a condom during sexual intercourse	40	13.3	23.3
Have had alcohol or used drugs prior to sexual intercourse	29.9	16.6	13.3

[a] Percent endorsed over the last 30 days
[b] Percent endorsed over the last 7 days

Prior to testing the hypothesis, a one-way ANOVA was computed to determine whether the groups differed in their pretreatment difficulty with emotion regulation. No significant differences were found [F (1,28) =1.49, p =.232], indicating that the control and experimental group participants had similar scores with respect to baseline levels of difficulty in emotion regulation (see Table 3 for means).

A repeated measures 2 (group) X 3 (time) ANOVA was conducted to examine Hypothesis 1. While the analysis revealed a significant change in difficulty with emotion regulation across time [F (2,56) = 3.19, p = .05], Hypothesis 1 was not confirmed. All participants reported feeling less difficulty in being aware of and in handling their emotions from the first assessment to the last assessment. Further examination of the score means revealed that, averaged across both groups, difficulty with emotion regulation decreased from Time 1 to Time 2 and from Time 1 to Time 3 assessment. The Time 2 to Time 3 assessment means of difficulty with emotional regulation showed no real changes.

There was no significant group effect for difficulty with emotion regulation [F (1,28) = 1.46, p = .236] and similarly, the group x time interaction was not significant [F (2,56) = .149, p = .862]. Table 3 shows that both the control group and experimental groups' means stayed very close to the difficulty with emotion regulation midpoint of the 6-point scale (i.e., 3), and demonstrated little variance.

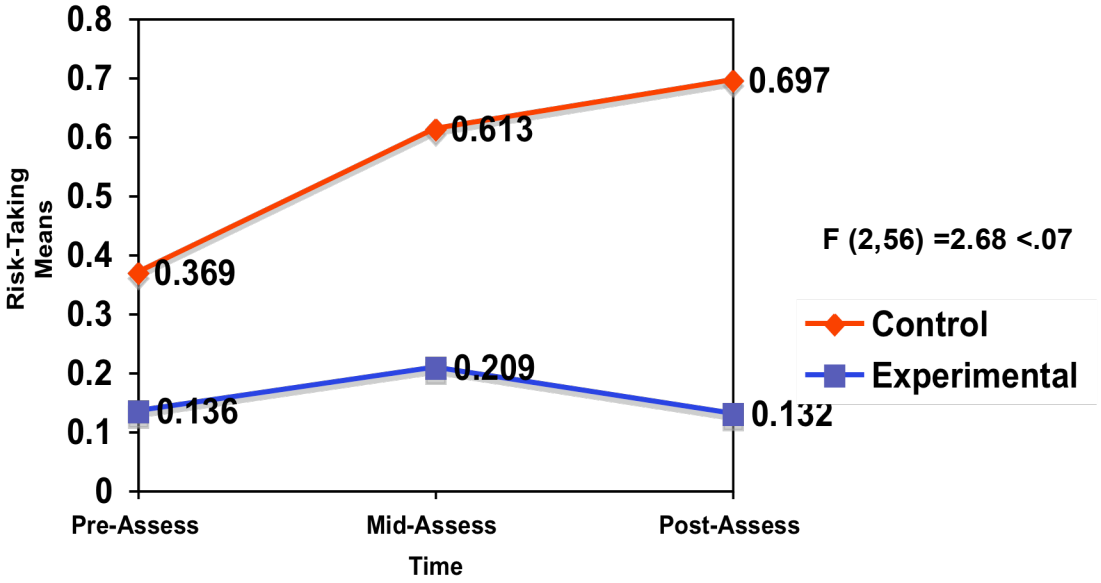
The second research question dealt with expected changes in risk-taking behavior between the experimental group and the control group.

Hypothesis 2. Experimental group participants, but not control group, will show a significant *decrease* in their risk-taking behaviors from pre-assessment to follow-up. Prior to testing Hypothesis 2, a one-way ANOVA was computed to determine whether the groups differed in their pretreatment risk-taking behaviors. Significant differences were found [F (1,28) =5.03, p =.03]. The control group reported over two times as much risk-taking at the pre-assessment as the experimental group (see Table 2 for means).

A repeated measures 2 (group) X 3 (time) ANOVA was used to determine if the experimental group showed a significant decrease in their risk-taking across the three time points of the study compared to the control group. The means for risk behaviors across time for each group can be seen in Table 3. While the results from the ANOVA showed that the effect of time was significant [F(2,56) =3.33, p =.043], Hypothesis 2 was not confirmed. Overall, there was actually an *increase* in reported risk-taking when looking across both groups together. The change across time for each group can be seen in Table 2.

The effect of group on risk-taking was significant as well, [F(1,28) = 5.496, p =.03]. The control group reported significantly more risk-taking (all time points averaged) than the experimental group. Figure 1 shows that there was a time x group interaction that approached significance [F(2,56) =2.68, p =.07]. The control group showed consistent increases in risk-taking across time, nearly doubling its risk-taking from the pre-assessment to post-assessment. The experimental group showed a slight increase from the pre to mid assessment and then a slight decline below the pre assessment mean by the follow-up (see Table 2).

Figure 5. Interaction between Time and Group on Risk-Taking across the Three Time Points



Quantitative measures of difficulty with emotion regulation and risk-taking were used to assess the first and second research questions. Given the exploratory nature of the study it was deemed necessary to collect qualitative data as well. The third research question addressed how participants connect emotions to risk-taking. Qualitative data collection was seen as particularly appropriate given the lack of research specifically dealing with emotion regulation (not necessarily impulse control) and risk-taking in emerging adults.

Hypothesis 3a. It was hypothesized that participants would have some notions about a relationship between emotions and risk-taking and that they would report a deepening in this understanding post-intervention.

Qualitative content analysis was used to evaluate all 28 participants' responses to open-ended item (Miles & Huberman, 1994) prior to curriculum delivery. Both control and experimental group participants were asked to respond to the following item, "For the question below think of negative risk-taking as behaviors that may have positive outcomes but involve potential for harm (mental or physical) to the self as well. E.g., binge drinking, driving while intoxicated, sex without condoms. Given this definition, please explain in what ways you think emotions are connected to risk-taking." Two coders jointly analyzed participants' responses and created themes and sub themes for each group (control and experimental). There was 100% agreement for each theme.

Themes that emerged from the experimental group (n= 13) and control group (n=15) participants were: 1) emotions drive risk-taking 2) take risks to connect or fit in 3) enjoy the thrill and 4) consequences of risk-taking create anxiety. Participants' responses

were placed in each of these categories. A response could be classified in more than one theme. The numbers of responses for each theme, separated by group, are reported in Table 6.

The first theme, that emotions drive risk-taking, also had a number of sub-themes. Most participants (in both groups) reported a general understanding that emotions are an important part of risk-taking. This was exemplified by the following quotes,

> "Emotions play a crucial role in risk-taking. The state of mind that one is in will greatly affect the types of decisions they make."
> "Your emotions can prevent you from thinking clearly about consequences and therefore more likely to go and take a risk."

Participants (almost exclusively the control group) made a definite connection between negative emotions and risk-taking.

> "When you feel down you are more likely to act spontaneously and irrationally compared to times when you feel relaxed and calm."
> "If you feel negative emotions, you are more likely to take negative risks. For example, if you have a tendency to feel sad, angry, or depressed, you may choose to take part in such actions as using drugs, cutting, or physically hurting others."

A few participants reported coping with negative emotions by trying to displace them with the anticipated rush of risk-taking,

> "People take life threatening risks because they are bored and want to some excitement."
> " Sometimes a risk taking event can come from boredom, or an emotion that is upsetting and feels like they need to do something to forget about what is upsetting them."

Several participants (again more in the control group) felt that risk-taking was about pursuing the emotions related to an adrenaline rush. The motivation then was to pursue a positive emotion (adrenaline rush) rather than get away from a negative feeling as mentioned above. Many participants spoke of thrill seeking,

> "Also, emotionally, people enjoy the thrill of risk-taking, as they feel that they got away with something. They feel invulnerable."

Table 6. Pre-curricula Themes about Emotions & Risk-Taking

Pre-curricula Themes			
Experimental Group (n=14)		Control Group (n=15)	
n	Theme	n	Theme
6	Emotions Drive Risk-taking	11	Emotions Affect Risk-taking
4	Take Risks to Connect or Fit in	5	Enjoy the thrill
3	Consequences of Risk-taking Create Anxiety	4	Consequences of Risk-taking Create Anxiety
2	Enjoy the Thrill	3	Take Risks to fit in

> "Risk taking gives a person a "rush" as in, makes them excited and increases adrenaline."
> "People that like taking risks (or what they find as risk-taking) because they like the excitement of doing something that is somewhat dangerous but exciting at the same time."

Several participants referenced risk-taking in terms of others. They saw it as a means to connect with others, fit in, and as a way to prove one's self to others. There was a negative emotional aspect (feeling threatened or lonely) to connecting with others as well.

> "When I take a risk to drink, it brings me closer to my friends."

> "Adrenaline rush-proving someone wrong-getting attention from someone-the way your feel at the time you take a risk affects the whole experience."

> "In a group setting, people take risks based on the approval of others, like binge drinking. Therefore, approval of others is based on emotions so the risk of binge drinking is emotions based."

> "Sometimes people take risks and don't worry about the consequences. Sometimes people feel pressure from outside groups to do things like risks so that they can fit in."

A few participants discussed risk-taking in terms of how the possible consequences created negative emotions like "anxiety" and "stress".

> "When you take a risk there probably will be anxiety that there will be a negative outcome. This may lead to stress. There will also be excitement with the risk and probably adrenaline. If there is a negative effect later there will also be even more stress and worry."

> "Emotion inhibit risk-taking, or emotions are resulted from negative risk-taking that turns out bad, e.g. getting pregnant or getting stds from sex w/o condoms or getting dui's if you drive while intoxicated."

A second part of Hypothesis 3a involved having the experimental group respond to one additional open-ended item in the follow-up assessment, approximately 1-2 weeks after the second session. "In the space below please describe what you learned from session 1 and 2: " Reponses to this open-ended item provided participants with the

opportunity to mention any aspect of the study experience. It was hypothesized that participants would not only mention the connection between emotions and risk-taking, but would show some gain in understanding as well (Hypothesis 3a). Two coders jointly analyzed the responses and distilled responses into major over-arching themes. The most common theme dealt with the importance of emotional awareness. The second theme was about suppressing emotions in order to accomplish a goal. The last theme centered on specific emotions related to risk-taking. These themes are listed in Table 7.

The first theme dealt with the importance of emotional awareness and had the most responses. It is best exemplified by the following quotes,

> "I learned how to examine my feelings while doing risk taking activities."
>
> "I have learned about the importance of addressing my own emotions in order to do things more effectively."

There were a few sub-themes within the theme of emotional awareness. Some individuals learned that emotional awareness is an important aspect of life.

> "I learned that throughout everyday life, I need to acknowledge, evaluate, and accept my feelings and emotions."
>
> "Validate emotions as they arise, without judgment. Do this with myself and with others for optimal communication and health. There are certain things a person needs and when those are not met, often we feel negative emotions or take risks in order to subdue bad feelings or meet some other goal."

Some made a connection between emotional awareness and relationships.

> "I learned that emotions affect the actions and risks that you take. I also learned that I need to pay attention to my emotions more so that I can have healthy relationships and I can communicate better."

In the second theme participants reported a need to suppress emotions (ostensibly negative) when taking risks, in order to succeed or accomplish.

Table 7. Experimental Group Post-curricula Themes about Emotions and Risk-taking

Experimental Group Post-Curricula Themes (n=14)	
Theme	n
Importance of Emotional Awareness	9
Suppress Emotions to Accomplish	4
Specific Emotions & Risk-taking	4

> "That emotions hinder our ability to take risks and once we push through them we can accomplish more then we thought we could."
>
> "I learned about motivation and to not let fear over come my ability to make decisions and take risks."

The third major theme mainly had to do with specific emotions tied to the sessions.

> "Session one had different emotions involved. There was more trust and empowerment I suppose is how you would describe it. Session two was different because i felt it was more competitive. I also felt we would make the game more interesting and such, excitement and motivation."

Hypothesis 3b. Given the exploratory nature of the study, and the importance that emotions play, an assessment of emotions was conducted within the intervention. In the experimental condition, emotions and their intensity were assessed following each of three main activities, in each of the two sessions. This resulted in six emotion/intensity assessments for each of the fourteen experimental group participants. These emotion assessments acted as a gauge of the emotional intensity (and type) of each activity. See Appendix D to view the assessment. Table 4 shows the average emotional intensity rating for each activity in sessions 1 and 2. The activities, both challenge course and classroom, elicited a range of emotions in the participants (see Table 4).

Of note, participants reported emotions at the highest level of intensity in two of the three classroom activities. As expected, participants reported higher average emotional intensity ratings in the challenge course activities. All three of the challenge course activities had high emotional intensity ratings. Table 5 shows participant endorsements for each emotion category experienced in each activity. Enjoyment and love received the highest endorsements across all emotions in both sessions. The Fear category was endorsed by a majority of participants in several activities (see Table 5).

Table 8. Emotional Intensity Rating for Each Activity across 2 Experimental Group (n = 14) Sessions

Session 1 Challenge Course			Session 2 Classroom		
Activity 1	**Activity 2**	**Activity 3**	**Activity 1**	**Activity 2**	**Activity 3**
m = 2.7 sd = 1.15 range = 1-6	*m* = 3.1 sd = 2.05 range = 1-7	*m* = 3.5 sd = 1.60 range = 1-7	*m* = 2.2 sd = 1.02 range = 1-3	*m* = 2.5 sd = 1.24 range= 1-7	*m* = 2.4 sd = 1.50 range=1-7

Note: average range 1 = not intense to 7 = very intense

Table 9. Post-Activity Participant Endorsement for Check List of Emotions (n = 14)

		Percent of Participants Endorsed					
		Session 1 Challenge Course			**Session 2** Classroom		
Emotion Category	**Emotion Words**	**Activity 1**	**Activity 2**	**Activity 3**	**Activity 1**	**Activity 2**	**Activity 3**
Anger	resentment annoyed irritated hostile	36	29	14	29	57	21
Sadness	grief sorrow loneliness despair dejected	36	29	21	36	14	21
Fear	Anxious nervous concerned wary edgy panic terror	71	86	71	64	50	100
Enjoyment	happy relief satisfied delighted amused proud pleasure thrilled	93	93	93	93	100	100

Table 9. (continued)

		Percent of Participants Endorsed					
		Session 1 Challenge Course			**Session 2** Classroom		
Emotion Category	**Emotion Words**	**Activity 1**	**Activity 2**	**Activity 3**	**Activity 1**	**Activity 2**	**Activity 3**
Love	accepted trust friendly kindness devoted adored	71	79	71	64	43	86
Shame	Guilt embarrassed remorse regret humiliation mortified	64	29	36	36	36	21
Surprise	shock astonished amazed wonder	50	71	57	29	36	43
Disgust	contempt disdain scorn distaste aversion revulsion	29	21	14	21	29	21

Chapter V: Discussion

The purpose of this exploratory study was to address the feasibility of EL as means for teaching emotion regulation and risk-taking skills. A brief intervention was designed and implemented for emerging adults. Difficulties with emotion regulation and risk-taking behaviors were measured between and across three time periods for control and experimental groups. Participants' perceptions about how emotions are connected to risk-taking were assessed as well. Finally, participants who received the intervention provided feedback on what they learned.

It was hypothesized that experimental group participants receiving the intervention would show less difficulty in handling negative emotions (Hypothesis 1) and then decreases in their risk-taking (Hypothesis 2) as compared to the control group participants. The third hypothesis reflected the exploratory nature of the study and utilized qualitative methods addressing participants' nascent theories as to how emotions and risk-taking are connected (Hypothesis 3a). Additionally, it was hypothesized that experimental group participants would demonstrate a deeper understanding of risk-taking and emotions from pre to follow-up assessment (Hypothesis 3b). The qualitative data provided a rich context for understanding the participants in this study and will be discussed first. The null findings for the first two hypotheses will then discussed in full. The study's strengths, weaknesses, and possible future directions conclude the discussion.

Risk-taking behaviors are common in adolescence and emerging adulthood (Arnett, 1992, 2005; Zuckerman & Kuhlman, 2000; Boggess, Lindberg, & Porter, 2000; Martin et al., 2002; Steinberg, 2007). Most participants in this study reported multiple risk-taking behaviors at the pre-assessment, reflecting findings from the literature. The participants' perspectives on risk-taking were consistent with theoretical ideas about the multi-dimensional nature of risk-taking behavior (Irwin et al., 1997). Participants also reported that impulsivity is an important part of risk-taking and that sensation seeking can be a major motivator in risk-taking behavior as well. These findings are consistent with those found in other risk-taking research showing that impulsivity and sensation seeking increase risk for engagement in substance use, aggression, sex and other high risk behaviors (Zuckerman & Kuhlman, 2001).

Through much of adolescence and into emerging adulthood, the socio-emotional centers of the brain dominate decision-making, slowly integrating the executive functions (e.g. planning, decision-making) of the prefrontal cortex (Dahl, 2004; Weinberger et al., 2005; Steinberg, 2007). Consistent with Hypothesis 3a, at baseline the emerging adults in this exploratory study mirrored the literature and recognized the vital role that emotions play in risk-taking behavior. There were slight differences, however, between the experimental and control group perspectives. The control group expressed more ideas about both positive (thrill seeking) and negative emotions (sadness, boredom) driving risk-taking behaviors. Control group participants also discussed impulsivity and risk-taking more than those in the experimental condition. Risk-taking seemed more other-oriented (e.g. fitting in, connecting) for the experimental group participants. The

experimental group participants reported significantly less risk-taking behavior than those in the control condition, at all time points. Experimental group participants also spoke more of anxiety related to the consequences of risk-taking and saw this as inhibitory. While speculative, it seems as though the experimental group participants were anxious about possible negative consequences and this resulted in less risk-taking behaviors. Overall, the qualitative data revealed similar ideas among participants about how emotions and risk-taking are connected.

Participants in both conditions explained how negative emotions (loneliness, boredom, anxiety) can lead to risk-taking behaviors. Empirically, negative emotions have been tied to increased risk-taking (Kim & Kanfer, 2009). In agreement with risk-taking literature (Zuckerman & Kuhlman, 2000), participants cited thrill seeking or sensation seeking as reasons for risk-taking behaviors. Participants also reported using the thrill of risk-taking as a way to cope with or displace negative emotions, which is also concordant with existing research findings (Zuckerman & Kuhlman, 2000; Romer & Hennessey, 2007). Anecdotally, during the initial emotional check, prior to the activities, a few participants reported feeling very stressed or anxious. These same individuals after the first high element climbing activity talked during the debriefing about how good they felt and specifically referenced the "rush" as getting rid of their bad moods. Using risk-taking as a coping mechanism is an important dyanmic to focus on in future studies. Roughly a third of the participants registered potentially negative feelings (from anticipated consequences) that can come of risk-taking.

The presence of peers is viewed as a critical factor that can increase risk-taking behavior (Gardner & Steinberg, 2005, Steinberg, 2007). Participants in this study agreed with the pervading literature in that they viewed social others as being a major force in risk-taking behaviors. The qualitative data were heavily laden with language regarding peer-motivated behavior. The power of the group and group processing discussed by Yalom (2005) was evident. Many participants in this study reported, and demonstrated during group activities, that they engaged in risk-taking to connect with others, fit-in, or to appease others' expectations. Social forces teach about and affect young peoples' emotions (Leary, 2005; Keren & Ben-Zur, 2007).

Carver and his colleagues (1983) showed how individual behavior can be unconsciously affected by watching social feedback given to *others*. The qualitative data showed that participants viewed the activities in this study as a positive form of risk-taking, which may have created an expectation to suppress and "get past" negative emotions in order to achieve goal success with a partner. Several participants discussed suppressing negative emotions (fear, anxiety) because they did not want to let their partner down (in the activity). The effect of peers on decision-making was a key concept discussed in the debriefings, providing the participants the kind of direct outcome feedback Byrnes (1999) holds to be essential for learning and better decision-making. The peer pressure experienced in the activities did seem to mimick that experienced in more negative risk-taking activities. No studies could be found addressing this type of potentially harmful emotion regulation as tied to positive risk-taking. Peer mediated

emotion regulation in the context of risk-taking would be an important direction for future research.

Experiential learning techniques are a unique pedagogy because individuals receive direct outcome feedback (and provide it) in a group-based setting. These two elements, outcome feedback and group processing, are seen as critical elements in learning and behavior change (Yalom, 2005). In EL activities that are debriefed, insights gained from one activity can be directly applied to the next activity. The dynamic recursive cycle (refer back to Figure 3) of concrete experience (activity), reflection (group debriefing), conceptualizing (group debriefing), and action (next activity) plays out many times. The experimental group participants engaged in the EL cycle three times each session with a total of six times for the entire intervention. Participants in the present study experienced and discussed a range of emotions in themselves as well as others. While admittedly speculative, it is plausible that the peer-group element of the intervention may have been a key mechanism that facilitated the experimental groups' moving from more global notions about emotions and risk-taking to understanding the more specific importance of emotional awareness in risk-taking.

Despite the fact that the participants reported multiple risk-taking behaviors and were linking emotions to risk-taking; expected intervention effects were not found between experimental and control participants' difficulty with emotion regulation or risk-taking behaviors. As such, the first two hypotheses were not confirmed. The null findings may be attributed to several methodological issues. First, given scheduling difficulties and the amount of time required from experimental participants, it was not possible to

randomly assign individuals to experimental and control groups. Lack of random assignment was clearly problematic as the control group reported more risk behaviors than the experimental group at pre-assessment. Additionally, the sample size was small. Power analyses indicated that a sample size of 28 participants would be adequate, but this sample size still proved too small, and inhibited our ability to conduct analysis of covariance (ANCOVA). Ideally an ANCOVA should be conducted with baseline differences in risk-taking acting as the covariate.

The first hypothesis purported that experimental group participants would show decreases in difficulty with emotion regulation after receiving the intervention compared to the control group. Contrary to Hypothesis 1, all participants (control and experimental) reported less overall difficulty with emotion regulation from pre to follow-up assessment. Both groups received the emotion regulation curricula. Emotion regulation was discussed in the power point lectures and in the intervention; this could have been enough to affect abilities in both groups. That is, the curriculum alone may have been sufficient in creating more awareness in all participants' emotions and strategies used to deal with those emotions.

Another possibility for the lack of group differences in emotion regulation was that there were measurement issues surrounding the Difficulty with Emotion Regulation Scale. The scale's marginal reliability (ranging from $\propto = .530$ to $\propto = .679$) calls into question how accurately the scale assessed (Krathwohl, 1998) difficulty with emotion regulation at any given point in time. Poor consistency in the measure could have obscured meaningful (intervention driven) changes between participants' pre, mid,

and follow-up measures of difficulty with emotion regulation. The self-report nature of the scale could have created problems as well. Participants may have "thought" they were emotionally aware but perhaps were not as good at detecting subtle or glossed over emotions that still motivated behavior. It may be the case that future studies should focus on how capable emerging adults are at emotional awareness; that is accurately identifying, labeling, and accepting emotions.

Added to the marginal reliability of the scale was the variability in time between assessments for the two experimental groups and the control group. One experimental group had approximately one and half weeks between the two sessions, while the other experimental group had three weeks between sessions. The control group had exactly one week between the two sessions. The intervention's effect may have significantly weakened in three weeks between sessions. There was also a restriction of range for responses on the Difficulty with Emotion Regulation Scale. The restriction of range was shown in the minimal variance demonstrated in participants' scores. There were five response options (almost never to almost always), and yet a large majority of responses provided by participants fell between the second and third response options, ranging by only one point on the five-point Lickert scale. Restriction of range is an issue because it makes it difficult to detect differences (Krathwohl, 1998). Although, the Difficulty with Emotion Regulation Scale suffered problems, there are not many other scales from which to choose. Nonetheless, findings from this study indicate a need for development of more robust measures of emotion regulation in non-clinical, emerging adult populations.

The second hypothesis, that experimental group participants would show a decrease in risk-taking behaviors after receiving the intervention compared to the control group, was not supported. Risk-taking changed significantly over time and between groups, but the interaction between the two (time x group) was only marginally significant. To more clearly understand the pattern of findings, an examination of group means is necessary (see Table 3). Recall that the control group reported significantly more risk-taking at baseline than the experimental group, and as shown in Figure 1, increased in risk-taking across all time points. Experimental group participants also showed an increase in risk-taking from pre to mid-assessment, but then declined in risk-taking from mid to follow-up assessment (below pre-assessment mean).

There are several possible explanations for the findings regarding Hypothesis 2. First, the significantly different base rates in risk-taking behaviors between the experimental and control groups may have made it particularly difficult to detect intervention effects. The experimental group may not have had enough of the problematic behavior to significantly shift, while the control group appeared to actually increase, further obscuring intervention effects. A larger sample with randomly assigned subjects or more closely matched baseline risk-taking levels would be an important issue to address in future studies.

There were cohort effects as well that may have obscured findings.. Cohort effects, also known as local history, are events that happen to one or more groups in a study, but not all. Cohort effects can affect behavior on outcome measures, thus threatening the validity of a study (Krathwohl, 1998). The experimental group

intervention and assessments took place in the spring. The control group assessments happened in the summer, around the 4th of July. There might have been an inflated occurrence of risk-taking behavior for one of the experimental groups as their mid and follow-up assessments surrounded a school holiday (spring break). In the future, making certain to concurrently conduct experimental and control groups' sessions could eliminate cohort effects. Future studies should consider when intervention research is conducted, being mindful of holidays, particularly those that typically have higher rates of risk-taking by emerging adults

Another possible reason for the lack of differences in emotion regulation across the two groups was the way in which risk-taking was assessed. The varying time periods between assessments for the two experimental groups and the control group could have affected the reported risk-taking behaviors. The experimental condition had a small number of total participants who were split into two separate groups. The experimental group that had three weeks between assessments may have had a significant decay in intervention effects. The three week period also allowed more time for risk-taking behaviors to ensue. The other experimental group had only one and a half weeks between the pre and mid-assessment, but spring break fell in that week, and this might have resulted in the initial rise in risk-taking reported for the experimental groups combined.

There were other risk-taking measurement concerns. The increase in risk-taking behaviors for the experimental group in this study was contrary to expectations. While it is plausible that risk-taking did increase in both groups despite the curricula and intervention, there is an alternative explanation related to a possible measurement artifact.

The Time 1 measure assessed risk-taking over a 30-day period, whereas the Time 2 and Time 3 measures assessed risk-taking over a seven-day period. In order to have comparable data points for all three time points, an average daily proportion was created for each. The daily proportion created for the Time 1 assessment may have underestimated the true frequency of risk-taking, whereas the Time 2 and Time 3 assessments could have been more accurate. Participants may have been less likely to accurately recall behaviors over the past 30 days (Time 1) than over the last seven. Problems with accurate recall in instruments have been an issue for some time (Bernard, 1984). When the frequencies were divided by the number of days, it may have appeared that there was a jump in risk-taking. For example, a score of five on risk-taking at Time 1 divided by 30 days would result in a .17 frequency score, while a score of five on risk-taking at Time 2 divided by seven days by seven days would result in a .70 score. This would result in technical increase in frequency, but may not necessarily be meaningful. This possible measurement artifact may have obscured intervention effects from Time 1 to Time 2. In the future, the same *short* recall period should be used in self-report measures.

An additional reason for the lack of group differences is that the present study's intervention may not have been long enough. Recall that the control group reported no real increase in risk-taking behaviors from Time 2 to Time 3 (see Table 3), while the experimental group showed a slight decline. While short-term (30-day), intense, psychological interventions have been found to reduce risk-taking (Aklin, Tull, Kahler, Lejueuz, 2009), other successful uses of experiential education as a method of delivery

(Finkenberg, Shows, & DiNucci, 1994) have taken place over the course of whole semesters. Ideally the intervention would be integrated into an existing college class's curriculum. For example, incorporating this intervention into a semester long college class would be ideal because participants would already be meeting regularly, therefore there would be no issues regarding scheduling. The group mechanisms underlying successful psychoeducational groups could be optimized over several sessions in a semester long class as well.

Study Strengths

One of the strengths of the present study was the curriculum. The experimental and control groups received the curricula discussing emotion regulation and risk-taking skills. Both groups reported less difficulty with emotion regulation from the pre-assessment to the follow-up assessment. Several aspects of this exploratory study's design were noteworthy. Most EL studies are cross sectional in nature, meaning interventions are provided on or only assessed at one time point. The present study was able to provide an intervention on two occasions and assessed behaviors across three points in time. The study was singular in EL research in that it assessed difficulty with emotion regulation and utilized an experimental and control group design. Reviews of risk-taking literature have long called for active and intense interventions (Donohew, Zimmermanb, Cuppa, Novak, Colon and Abel, 2000; Kirby, 2001). The study was also unique in that it used process measures addressing participants' emotions following low and high element activities. The process measures of emotions confirmed that the activities successfully engaged participants and some activities even resulted in intense

emotional experiences. These results support this intervention's ability to elicit emotions similar to those experienced in problematic risk-taking, and suggest that this methodology is a solid means for exploring and teaching about emotions. Another strength of the present research was the mixed-methods design, which resulted in qualitative data that were useful for providing a more complete picture of participants' experiences. Participants were able to articulate, in their own words, a movement from global understandings about emotions and risk-taking, to more skill-based notions of how emotional awareness affects risk-taking.

Study Limitations

As is the case for most exploratory studies, there were important challenges and limitations to the current study. The poor reliability of the DERS coupled with the inconsistent measurement periods between experimental groups may have obscured intervention effects. A small sample size may have limited our ability to detect differences between the groups. The small sample size presented other challenges in terms of selection bias. The challenge course was only available in the spring and thus necessitated running the experimental condition during this time. Subject recruitment proved problematic in that individual availability was one of the primary factors in assigning participants to groups and even conditions. The low number of available participants and limited availability of the challenge course forced running only the experimental condition in the spring. Those who were able to make time for the study may have been efficient time schedulers as well as individuals interested in bettering their emotional skill sets. Moreover, individuals enrolled in summer sessions may have been

catching up or trying to improve lagging GPAs that were affected by risk-taking behaviors. To maximize their ability to test the EL intervention, future studies should recruit larger numbers of participants and randomly assign them to condition.

Future Directions

There are several possible directions for future extensions of this research. With respect to recruitment, future studies might benefit from incorporating the intervention into a pre-existing class or curriculum that has participants meeting regularly. With respect to overall design, to more accurately assess the methodology and curriculum, a true control group receiving no curriculum should be added. Also, a larger sample size is necessary, allowing for more variation in outcome measures and control of potentially confounding variables. While a random assignment of subjects would be helpful, it could be useful to select and match individuals in control and experimental conditions on level of risk-taking behaviors or perhaps even on sensation seeking. Another measure of emotion regulation should be added as well, possibly one that focuses more on emotional awareness. In terms of process measures, the post-activity assessments of emotions should be included in any future studies. Having participants complete a quick written emotion reflection item after activities might enhance the process measures of emotions. With regards to the key feature of the present study, group processing, it would be useful to record the debriefing/discussions so that they could later be transcribed and analyzed. On a related note, qualitative data provided an important context and proved to be insightful, therefore, they should be maintained as a part of the overall study design. With the above corrections in design, measurement and recruitment

allotted for, this line of research shows promise in terms of adding to the risk-reduction literature.

Appendix A

Pilot Study

Participant Perceptions of experiential learning as a method for teaching communication skills

Purpose

A pilot study was conducted with 19 emerging adults (18-25 years of age). The purpose of the pilot study was to explore participants' perceptions of an experiential learning session on communication skills. Another aim of the study was to determine if participants retained knowledge from a social and communication skills intervention. The pilot was designed to explore the feasibility of experiential learning as an intervention methodology. The overarching goal is to design an effective curricula/intervention that decreases risk-taking behaviors.

Procedure

The pilot study was a mixed methods design. Participants engaged in a three-hour intervention. Participants engaged in multiple (4) low element games followed by facilitator-lead debriefings. Before and after each game, communication and social skill concepts were discussed by the group. Quantitative pre-test measures of participants' attitudes about their communication and social skills were obtained prior to the intervention delivery. Post-test measures were collected two to three weeks following the intervention (See Appendix A). Qualitative measures were administered immediately following the intervention session and three weeks to one month post-intervention session.

Results

Participants Communication & Social Skill Assessment

Total scale scores were computed for participants' pre and post test on the communication and social skills assessment. These two total scale scores were then used to compute a paired-sample t-test. The pre-post scale means differed indicating increases in awareness and confidence surrounding communication and social skills [$t(13)= -2.126.43, p < .052$].

Perceptions of Methodology

The majority of participants supported the methodology as a means for teaching communication and social skills. Their impressions were overall very positive. Twelve of 17 participants reported enjoying or liking the games. This was by far the most discussed aspect of the intervention. Most participants (14) felt that the intervention was a good learning experience, helpful, or productive. Many participants reported feeling more aware of communication after the intervention. A few mentioned the importance of the feedback provided to them during the games and debriefings. None of the participants reported feeling that the methodology was ineffective. This could be attributed to politeness. Even though the post-session interview took place three weeks to one month out, most of the participants recalled at least one of the key concepts discussed. Many reported attempting to use at least one of the skills taught ("I" speak, Paraphrasing).

Pilot Measure

Communication Skills Attitude Scale

Participants were asked to rate from 1 (strongly disagree) to 5 (strongly agree) how much they agree with the following statements.

1	In order to be in a good relationship, I must have good communication skills.
2	I don't see the point in learning communication skills.
3	Relationships don't fail because of poor communication skills.
4	Developing my communication skills is just as important as developing my knowledge for a career.
5	Learning communication skills has helped or will help me respect others.
6	I don't have time to learn communication skills.
7	Learning communication skills is interesting.
8	I can't be bothered to turn up to sessions on communication skills.
9	Learning communication skills has helped or will help facilitate my team-working skills.
10	Learning communication skills has improved my ability to communicate with others who are important to me.
11	Communication skills' teaching states the obvious, and then complicates it.
12	Learning communication skills is fun.
13	Learning communication skills is too easy.
14	Learning communication skills has helped or will help me respect others.
15	In thinking about careers or relationships, I think it is a really good idea to learn communication skills.
16	I don't need good communication skills to be successful.
17	I find it hard to admit to having some problems with my communication skills.
18	I find it difficult to take communication skills learning seriously.
19	Learning communication skills is important because my ability to communicate is a lifelong skill.
20	Communication skills learning should be left to psychology students.

Post-Session Interview

This interview will explore the participants' perceptions of an experiential learning session on communication skills. Participants will be contacted by phone and asked the following questions. Detailed field notes will be taken.

Date:

Participants ID:
(first two initials for mother's maiden name and last 4 digits of their phone number)

1) What is your opinion of the program overall?

2) What did you learn from the session?

3) What do key communication skills do you remember?

4) How have you used the skills since the program?

5) Please describe any other feedback or suggestions you have regarding the program.

Appendix B

Difficulties in Emotion Regulation Scale
Gratz&Roemer(2004)

1: Nonacceptance of Emotional Responses (NONACCEPTANCE)
29) When I'm upset, I feel guilty for feeling that way.
25) When I'm upset, I feel ashamed with myself for feeling that way.
15) When I'm upset, I become embarrassed for feeling that way.
14) When I'm upset, I become angry with myself for feeling that way.
33) When I'm upset, I become irritated with myself for feeling that way.
27) When I'm upset, I feel like I am weak.

2: Difficulties Engaging in Goal-Directed Behavior (GOALS)
30) When I'm upset, I have difficulty concentrating.
22) When I'm upset, I have difficulty focusing on other things.
16) When I'm upset, I have difficulty getting work done.
38) When I'm upset, I have difficulty thinking about anything else.
24) When I'm upset, I can still get things done. (r)

3: Impulse Control Difficulties (IMPULSE)
37) When I'm upset, I lose control over my behaviors.
31) When I'm upset, I have difficulty controlling my behaviors.
17) When I'm upset, I become out of control.
23) When I'm upset, I feel out of control.
4) I experience my emotions as overwhelming and out of control.
28) When I'm upset, I feel like I can remain in control of my behaviors. (r)

4: Lack of Emotional Awareness (AWARENESS)
7) I am attentive to my feelings. (r)
3) I pay attention to how I feel. (r)
12) When I'm upset, I acknowledge my emotions. (r)
21) When I'm upset, I believe that my feelings are valid and important. (r)
9) I care about what I am feeling. (r)
39) When I'm upset, I take time to figure out what I'm really feeling. (r)

5: Limited Access to Emotion Regulation Strategies (STRATEGIES)
20) When I'm upset, I believe that I'll end up feeling very depressed.
19) When I'm upset, I believe that I will remain that way for a long time.
35) When I'm upset, I believe that wallowing in it is all I can do.
40) When I'm upset, it takes me a long time to feel better.
32) When I'm upset, I believe that there is nothing I can do to make myself feel better.
26) When I'm upset, I know that I can find a way to eventually feel better. (r)
41) When I'm upset, my emotions feel overwhelming.
34) When I'm upset, I start to feel very bad about myself.

6: Lack of Emotional Clarity (CLARITY)

6) I have difficulty making sense out of my feelings.
5) I have no idea how I am feeling.
10) I am confused about how I feel.
8) I know exactly how I am feeling. (r)

1) I am clear about my feelings. (r)

Appendix C

Risk-Taking Behavior Questionnaire

Please indicate the number of times in the last 30 days you have engaged in the following behaviors.		**Frequency (number of times)**
1	In the last week I have ridden in a car or other vehicle driven by someone who had been drinking alcohol.	
2	In the last week I have driven after drinking alcohol.	
3	In the last week I have carried a weapon (e.g., a gun, knife, or club).	
4	In the last week I have been in a physical fight.	
5	In the last week I have been hit, slapped, or physically hurt on purpose by a boyfriend or girlfriend.	
6	In the last week I have smoked at least one cigarette.	
7	In the last week I have had at least one drink of alcohol on at least 1 day.	
8	In the last week I have had five or more drinks of alcohol in a row (i.e., within a couple of hours) on at least 1 day.	
9	In the last week I have used marijuana.	
10	In the last week I have used any form of cocaine (e.g., powder, crack, or freebase).	
11	In the last week I have used hallucinogenic drugs (e.g., LSD, acid, PCP, angel dust, mescaline, or mushrooms).	
12	In the last week I have used ecstasy (also called "MDMA" or “X”).	
13	In the last week I have did NOT use a condom during sexual intercourse.	
14	In the last week I have had alcohol or used drugs before sexual intercourse.	

Appendix D

Curriculum & Lesson Plans

Curriculum Part 1: Risk-Taking

A risk is any action for which there is some possibility of failure as well as some opportunity for success. (Peterson - 2002).

Negative Risk-Taking
This is risk-taking in a public health sense and is considered negative because the behaviors can lead to harm for the self or others.

Common examples are: binge drinking, driving while drunk, and unprotected sex.

Healthy Risk-Taking
This involves legal behaviors that meet one's needs (e.g., sensation-seeking, learning about self, boredom relief) with out compromising mental or physical health.

Common examples are: engaging in athletic activities and/or hobbies

Why Do We Take Risks
Types of Risk-Taking (Keyes, 2002)
Each of these types of risk-taking can be negative or positive.

Level I Risk-Taking: Physical
The biological arousal caused by physical risk-taking can be invigorating and/or a relief from an otherwise unpleasant state. Generally these are risks that involve being physical. For example, engaging in sports, sky diving, rock climbing, having sex.

Boredom
Boredom in a moment or with one's life can be a large motivating factor in risk- taking behaviors of all sorts.

Frustration
Sometimes we just feel the need to "act" in order to break out of a frustrating situation. This can be done purposefully or impulsively and has varying success.

Excitement & Focus
Participating in physical acts can help to create a sense of presence and focus that is very appealing. Some reasons for this are to escape other unpleasant feelings or purposefully pursued for its own sake.

Level II Risk-Taking: Commitment

These are more emotionally challenging risks, but can also be physical. Examples of commitment risks include starting a business, pursuing a college degree, getting emotionally involved with a person.

Risk is in the Eye of the Beholder

What is risky to one person may not be to another. Our culture can romanticize the "risk-taker" image and can have positive self-esteem raising features. But only the individual truly knows what is challenging for them and what is not.

The Risks We Avoid

Many times individuals will take a "lesser" risk in avoidance of another more challenging or intimidating risk. Again, the determination of risk is relative to each person. While others may see the behaviors as challenging, the person receives attention or self-esteem for engaging in such, but may not feel fully satisfied because they know that they are not taking the "true" risk.

Awareness & Genuine Risk

Risk-taking can lead to personal growth or deterioration. Becoming aware of the dimensions involved in risk-taking is important. This awareness can help individuals to be purposeful in meeting the emotional and physical needs that are satisfied, or not, with risk-taking behaviors. Genuine, positive, risks are behaviors that lead to healthy enjoyment and can expand a person's knowledge of themselves.

Emotions & Risk

Understanding the needs that drive risk-taking behaviors is an important step in learning how to take positive risks rather than unwittingly taking negative risks.

Curriculum Part 2: Emotion Regulation Skills

Emotional Awareness & Emotional Sensing

Emotional awareness involves recognizing, understanding, and labeling feelings.

- Interaction with others can be distracting and make it difficult to recognize how we are feeling in the moment.
- Sometimes feelings and emotions have to get to a certain level before they become detectable, but they can still affect our choices and behaviors.
- We learn about how to deal with emotions from experiences with others.
- We may be more comfortable/familiar with some emotions over others
- Get in the habit of labeling your feelings as you experience them.

Flavors of Emotion

- Are the feelings numbed, normal, or intense?
- On a scale of 1-10 how strong are your feelings?
- Emotions are sometimes a blend of feelings, which can be hard to separate or articulate.

Intense Emotions: Flooding

- Understand that intense feelings can make it hard to think and act purposefully, let alone communicate well.
- Recognizing flooding (overwhelmed with intense emotions) is important.
- Many "register" this too late and don't take positive action.
- Some "signs" of flooding: interactions *feel* too intense/After intense interactions you want to keep your distance/You can't think straight/You worry about another person's temper/Small issues seem to become big ones.
- Registering that you feel overwhelmed *or* causing someone else to feel overwhelmed is important. Productive interactions generally happen when feelings are less intense.

Emotional Expression

Accurately sharing thoughts and feelings with others can be difficult.
Framing & "I" Speak

- Be intentional about your emotional expression-make space and time.
- Be respectful of other people's time and your own-if it is a "bad" time to share, recognize this and make arrangements for another time/place.
- Frame your expression as positively as possible. This doesn't mean "sugar coating". This means talk about what you want, need, or desire rather than what you don't want, don't need, don't desire. This takes practice-an essential ingredient is *knowing* what you want, need, or desire (see Sensing).
- Try to limit one problem/topic per discussion.

- Take ownership of your thoughts and feelings with statements like: "I feel…", "I think…", "I'm having a hard time with understanding…", "I liked it when…".
- Ownership is much more effective than other forms of expressing feelings: "*You* made me feel…", "After *you* did…", "*You* aren't making any sense…".
- Take care of yourself. If you are feeling overwhelmed by your emotions or those of someone else, say so. Take a break if need be.

Emotional Receiving
Accurately understand other's thoughts and feelings. [1]
Active listening
- Maintain eye contact with the person talking.
- Show appreciation for the communication attempt/effort-some things are hard to talk about-acknowledge this.
- Stay as positive as possible.
- Sometimes you may find that you are already forming your response before the other person is done. This is NOT active listening-it's taking turns rather than connecting and can be counter-productive. If what has been said brings defensive emotions up, try to register them and express them. Dealing with feelings of threat is important in order to move on to a productive conversation. If the feelings are too strong, the conversation may have to be postponed.

Paraphrasing
- Give feedback or respond to the message-"I SPEAK".
- REPEAT BACK what you think the message was.
- Be patient and allow the person to correct any misunderstandings.

Emotion Management & Utilization
This involves choosing situations and environments *intentionally* in order to maintain or take care of yourself.
- If you know interactions in a certain environment or with certain people are usually negative or positive, use this information wisely.
- If you are feeling good and perform certain tasks better in that type of mood, mindfully use the mood to achieve goals.

Conversely, if you know that certain moods are not productive, avoid engaging in important task at that time or *do* something to intentionally shift the mood.

Session #1 Lesson Plan
CONTROL GROUP

Date: Group:

Time	Activity	Description
7:45	Setup	-Call day before to ensure room availability. -Call/E-mail Participants 1-2 days before to confirm. -Open room up, check lighting and AC.
8:00	Meet Group & Consent Forms	-Brief overview of study -Pass out contact sheet to record names, e-mails & phone numbers. -Pass out Informed Consent Forms -Collect Informed Consent Forms
8:20	Distribute Assessments	-Administer the Emotion Regulation Instruments (DERS & NMR). Pass scales, provide pens/pencils, answer questions.
9:00	Distribute Curriculum Materials	-Give Risk-Taking: Key Concepts Hand Out to the participants. -Read through the sheet for them. -Answer clarification questions only (do not discuss/explore concepts with group).
9:30-9:45	Wrap-up	-Provide Pizza -Discuss session # 2 -Make arrangements for session 2 (check availability etc.

Session #2 Lesson Plan
CONTROL GROUP

Date: Group:

Time	Activity	Description
7:45	Setup	-Call day before to ensure room availability. -Call/E-mail Participants 1-2 days before to confirm. -Open room up, check lighting and AC.
8:00	Meet Group	-Brief overview of study -Pass out contact sheet to record names, e-mails & phone numbers.
8:15	Distribute Curriculum Materials	-Give Risk-Taking: Key Concepts Hand Out to the participants. -Read through the sheet for them. -Answer clarification questions only (do not discuss/explore concepts with group).
9:00	Food & Wrap-up	-Provide Pizza -Discuss Survey Monkey with DERS and NMR to follow 1-2 weeks later. -Make sure e-mails and phone numbers are correct.

Session #1 Lesson Plan
EXPERMENTAL GROUP
Plan for the Day

Date: Time: 2-5pm Location: Cedar Park YMCA

Time	Activity	Description
1:15	Set-Up Course	
1:45	Meet Group	
2:15	Forms & Questionnaire	Consent / Course Waiver / Medical?
2:20	Warm-Up	Group Juggle-Names-Emotion / Human Knot
2:40	Norms & Intro	• Layout of Course-bathrooms etc. • Bathroom breaks as a team-speak up • Falling while walking/climbing ladder • Sunscreen • Jewelry • End by 5:00pm • Check-In and "I" Speak • Challenge by Choice
2:50	Curriculum P1	• What's the point-Need-Emo-Goal-Bhvr • Experiential Education Cycle & Learning-flip • Fundamental Needs-flip
3:00	Wind in Willows (5/10) (eyes closed)	• Trust-need for belonging/safety • Communication-verbal/non verbal • Emotions guide us to meet our Needs-flip • STRONG EMO / BLOCK THINK -more ignore emo-needs, stronger it becomes -less able to then think!

		Emotions-flip
EMOTION CHECK A		
3:15	Tandem Rope Climb	• Safety System-harness & belay • Name as many feelings as possible • Emotions, Thinking, Communication • Emotional Awareness-flip • Emotions & Risk-Taking
EMOTION CHECK B		
4:00	Wild Woozie (25/20)	• Sensing-Supportive Encouragement vs. Pressure • Awareness & Flooding • Risk-Taking & Emo-flip • Group Cheer/Celebrate☺
EMOTION CHECK C		
4:50	Wind Down	• Survey Monkey • NEXT SESSION-Calendar

Session #2 Lesson Plan
EXPERMENTAL GROUP
Plan for the Day

Date: 5-3-09 Time: 5-8pm Location:

Time	Activity	Description
4:00	Set-Up	❑Post-signs at elevator and in hall ❑Move desks ❑Set-mouse traps in back ❑Set-up Measures (paper) ❑Sign-in Sheet
5:00	Meet Group	
5:15	Forms & Questionnaire	❑Pizza ❑FINISH Emo-booklet (2) ❑Give new booklets (gold)
5:30	Norms & Intro	❑Bathroom breaks as a team-speak up ❑End by 8:00pm ❑Pass out handout-REVIEW Session 1 plus handout.
5:45	Warm-Up Human Knot or Poll Lift	❑Trust/communication
	EMOTION CHECK	
6:00	Curriculum P1	❑Why Here & Now-OBJECTIVES ❑Experiential Education Cycle & Learning-flip ❑Fundamental Needs-flip ❑Emotions-flip
6:05	Needs/Nots Competition (20/20)	❑Goals ❑Priorities ❑Factors that affect Decisions
	EMOTION CHECK	
6:45	Minefield	❑Emotions, Thinking, Communication

	(30/20)	❑Emotional Awareness-flip ❑Emotions & Risk-Taking-
EMOTION CHECK		
7:45	Wind Down	❑Survey Monkey ❑Stipend

References

Arnett, J. J. (2000). Emerging adulthood - A theory of development from the late teens through the twenties. *American Psychologist, 55*(5), 469-480.

Baird, A. A., Gruber, S. A., Fein, D. A., Maas, L. C., Steingard, R. J., Renshaw, P. F., et al. (1999). Functional magnetic resonance imaging of facial affect recognition in children and adolescents. *Journal Of The American Academy Of Child And Adolescent Psychiatry, 38*(2), 195-199.

Baker, A. C., Jensen, P. J., & Kolb, D. A. (1997). In conversation: Transforming experience into learning. *Simulation & Gaming, 28*(1), 6-12.

Bernard, H. R., Killworth, P., Kronenfeld, D., & Sailer, L. (1984). The Problem with Informant Accuracy: The Validity of Retrospective Data. Annual Review of Anthropology, 13, 495-517.

Boden, J., & Horwood, L. (2006). Self-Esteem, Risky Sexual Behavior, and Pregnancy in a New Zealand Birth Cohort. Archives of Sexual Behavior, 35(5), 549-560.

Byrnes, J. P. (1998). *The nature and development of decision making: A self-regulation model*. Mahwah, NJ, US: Lawrence Erlbaum Associates Publishers.

Byrnes, J. P., & Miller, D. C. (1999). Learning to Make Good Decisions: A Self-Regulation Perspective. *Child Development, 70*(5), 1121.

Carver, C. S., Ganellen, R. J., Froming, W. J., & Chambers, W. (1983). Modeling: An analysis in terms of category accessibility. *Journal of Experimental Social Psychology, 19*(5), 403-421.

Dahl, R. E. (2004). Adolescent Brain Development: A Period of Vulnerabilities and Opportunities. Keynote Address. *Annals of the New York Academy of Sciences, 1021*(1), 1-22.

Day, J., Chiu, S., & Hendren, R. L. (2006). Structure and function of the adolescent brain: Findings from neuroimaging studies. *Adolescent Psychiatry, 29*, 175-215.

De Haan, E., & De Ridder, I. (2006). Action learning in practice: How do participants learn? Consulting Psychology Journal: Practice and Research, 58(4), 216-231.

DeRubeis, R. J., & Crits-Christoph, P. (1998). Empirically supported individual and group psychological treatments for adult mental disorders. Journal of Consulting and Clinical Psychology, 66(1), 37-52.

Dorsey, A. M., Miller, K. I., & Scherer, C. W. (1999). Communication, risk behavior and perceptions of threat and efficacy: A test of a reciprocal model. *Journal of Applied Communication Research, 27*(4), 377-395.

Drevets, W. C., & Raichle, M. E. (1998). Suppression of Regional Cerebral Blood during Emotional versus Higher Cognitive Implications for Interactions between Emotion and Cognition. *Cognition & Emotion, 12*(3), 353-385.

Finkenberg, M. E., Shows, D., & DiNucci, J. M. (1994). Participation in adventure-based activities and self-concepts of college men and women. *Perceptual and Motor Skills, 78*(3), 1119-1122.

Freire, P. (1998). *Pedagogy of Freedom: Ethics, Democracy, and Civic Courage*. New York: Rowman & LIttlefield.

Gardner, M., & Steinberg, L. (2005). Peer Influence on Risk Taking, Risk Preference, and Risky Decision Making in Adolescence and Adulthood: An Experimental Study. *Developmental Psychology, 41*(4), 625-635.

Giedd, J. N., Blumenthal, J., Jeffries, N. O., Castellanos, F. X., Liu, H., Zijdenbos, A., et al. (1999). Brain development during childhood and adolescence: a longitudinal MRI study. *Nature Neuroscience, 2*(10), 861.

Greene, K., Krcmar, M., Rubin, D. L., Walters, L. H., & Hale, J. L. (2002). Elaboration in processing adolescent health messages: The impact of egocentrism and sensation seeking on message processing. *Journal of Communication, 52*(4), 812-831.

Greene, K., Kremar, M., Walters, L. H., Rubin, D. L., Hale, J., & Hale, L. (2000). Targeting adolescent risk-taking behaviors: the contributions of egocentrism and sensation-seeking. *Journal of Adolescence, 23*(4), 439-461.

Hatch, K. D., & McCarthy, C. J. (2005). Exploration of Challenge Courses' Long-Term Effects on Members of College Student Organizations

Exploration of Challenge Courses' Long-Term Effects on Members of College Student Organizations. *Journal of Experiential Education, 27*(3), 245-264.

Henderson, V. R., Hennessy, M., Barrett, D. W., Curtis, B., McCoy-Roth, M., Trentacoste, N., et al. (2005). When risky is attractive: sensation seeking and romantic partner selection. *Personality and Individual Differences, 38*(2), 311-325.

Hulsman, R. L., Ros, W. J. G., Winnubst, J. A. M., & Bensing, J. M. (1999). Teaching clinically experienced physicians communication skills. A review of evaluation studies. *Medical Education, 33*(9), 655-668.

Irwin, C. E., & MIllstein, S. (1986). Biopsychosocial correlates of risk-taking behaviors during adolescence. *Journal of Adolescent Health Care, 7*(6 Suppl), 82s-96s.

Irwin, C. E., Jr., Igra, V., Eyre, S., Millstein, S., Jacobson, M. S., Rees, J. M., et al. (1997). Risk-taking behavior in adolescents: The paradigm. In *Adolescent nutritional disorders: Prevention and treatment.* (pp. 1-35). New York, NY, US: New York Academy of Sciences.

Jaccard, J., Dodge, T., & Guilamo-Ramos, V. (2005). Metacognition, risk behavior, and risk outcomes: The role of perceived intelligence and perceived knowledge. *Health Psychology, 24*(2), 161-170.

Joffe, A., & Radius, S. M. (1993). Self-Efficacy and Intent to Use Condoms among Entering College-Freshmen. *Journal of Adolescent Health, 14*(4), 262-268.

Joplin, L. (1981). On defining experiential education. *Journal of Experiential Education, 4(1),* 155-158.

Kelley, A. E., Schochet, T., & Landry, C. F. (2004). Risk Taking and Novelty Seeking in Adolescence: Introduction to Part I. *Annals of the New York Academy of Sciences, 1021*(1), 27-32.

Kemp, A. H., Cooper, N. J., Hermens, G., Gordon, E., Bryant, R., & Williams, L. M. (2005). Toward an integrated profile of emotional intelligence: Introducing a brief measure. *Journal of Integrative Neuroscience, 4*(1), 41-61.

Kershaw, T. S., Ethier, K. A., Niccolai, L. M., Lewis, J. B., & Ickovics, J. R. (2003). Misperceived risk among female adolescents: Social and psychological factors associated with sexual risk accuracy. *Health Psychology, 22*(5), 523-532.

Kim, J. C., Dante. (2003). Social Self-Efficacy and Behavior Problems in Maltreated and Nonmaltreated Children. *Journal of Clinical Child and Adolescent Psychology, 32*(1), 106-117.

Kirby, D. (2001). *Emerging Answers: Research Findings on Programs to Reduce Teen Pregnancy (Summary)*. Washington, DC: National Campaign to Prevent Teen Pregnancy.

Kirby, D. B., Baumler, E., Coyle, K. K., Basen-Engquist, K., Parcel, G. S., Harrist, R., et al. (2004). The "'Safer choices" intervention: Its impact on the sexual behaviors of different subgroups of high school students. *Journal of Adolescent Health, 35*(6), 442-452.

Klaczynski, P. A., Byrnes, J. P., & Jacobs, J. E. (2001). Introduction to the special issue. The development of decision making. *Journal of Applied Developmental Psychology, 22*(3), 225-236.

Kolb, D. A. (1984). *Experiential Learning: experience as the source of learning and development*. New Jersey: Prentice Hall.

Krathwohl, D. R. (1998). Methods of educational & social science research: An integrated approach (2nd ed.). New York, NY US: Longman/Addison Wesley Longman.

Lambe, E., Krimer, L., & Goldman-Rakic, P. (2000). Differential Postnatal Development of Catcholamine and Serotonin Inputs to Identified Neurons in Prefrontal Cortex of Rhesus Monkey. *Journal of Neuroscience, 20(23)*.

Leary, M. R., Baumeister, R. F., & Vohs, K. D. (2004). The sociometer, self-esteem, and the regulation of interpersonal behavior. In Handbook of self-regulation: Research, theory, and applications. (pp. 373-391). New York, NY US: Guilford Press.

Lerner, R. M., & Galambos, N. L. (1998). Adolescent development: Challenges and opportunities for research, programs, and policies. *Annual Review of Psychology, 49*, 413-446.

Lewis, J. E., Malow, Robert M. (1997). HIV/AIDS Risk in Heterosexual College Students. *Journal of American College Health, 45*(4).

Lindberg, L., Boggess, S., Porter, L., & Williams, C. (2000, June 6, 2000). Teen Risk-Taking: A Statistical Portrait*,* 36.

Lopes, P. N., Salovey, P., CÃ´tÃ©, S. p., Beers, M., & Petty, R. E. (2005). Emotion Regulation Abilities and the Quality of Social Interaction. *Emotion, 5*(1), 113-118.

Martin, A. J., & Leberman, S. I. (2005). Personal Learning or Prescribed Educational Outcomes: A Case Study of the Outward Bound Experience. *Journal of Experiential Education, 28*(1), 44-59.

Martin, C. A., Kelly, T. H., Rayens, M. K., Brogli, B. R., Brenzel, A., Smith, W. J., et al. (2002). Sensation Seeking, Puberty, and Nicotine, Alcohol, and Marijuana Use in

Adolescence. *Journal of the American Academy of Child & Adolescent Psychiatry, 41*(12), 1495.
Masten, A. S. (2004). Regulatory Processes, Risk, and Resilience in Adolescent Development. *Annals of the New York Academy of Sciences, 1021*(1), 310-319.
Michael, K., & Ben-Zur, H. (2007). Risk-taking among adolescents: Associations with social and affective factors. *Journal of Adolescence, 30*(1), 17-31.
Miller, D. C., & Byrnes, J. P. (1997). The role of contextual and personal factors in children's risk taking. *Developmental Psychology, 33*(5), 814-823.
Miller, D. C., & Byrnes, J. P. (2001). Adolescents' decision making in social situations. A self-regulation perspective. *Journal of Applied Developmental Psychology, 22*(3), 237-256.
Morgan, S. E., Palmgreen, P., Stephenson, M. T., Hoyle, R. H., & Lorch, E. P. (2003). Associations between message features and subjective evaluations of the sensation value of antidrug public service announcements. *Journal of Communication, 53*(3), 512-526.
Morris, A. S., Silk, J. S., Steinberg, L., Myers, S. S., & Robinson, L. R. (2007). The Role of the Family Context in the Development of Emotion Regulation. *Social Development, 16*(2), 361-388.
Myers, H. F., & Taylor, S. (1998). Family contributions to risk and resilience in African American children.(Special Issue: Comparative Perspectives on Black Family Life, vol 1). *Journal of Comparative Family Studies, v29*(n1), p215(215).
Nelson, L. J., & Barry, C. M. (2005). 'Distinguishing Features of Emerging Adulthood: The Role of Self-Classification as an Adult': Erratum. Journal of Adolescent Research, 20(3), 417-417.
Ochsner, K. N., Gross, J. J., Baumeister, R. F., & Vohs, K. D. (2004). Thinking makes it so: A social cognitive neuroscience approach to emotion regulation. In *Handbook of self-regulation: Research, theory, and applications.* (pp. 229-255). New York, NY, US: Guilford Press.
O'Connor, M. L. (2000). Social Factors Play Major Role in Making Young People Sexual Risk-Takers. *Family Planning Perspectives, 32*(1), 50-51.
Park, N. (2009). Building Strengths of Character: Keys to Positive Youth Development. *Reclaiming Children & Youth*, 18(2), 42-47.
Patton, G. C., McMorris, B. J., Toumbourou, J. W., Hemphill, S. A., Donath, S., & Catalano, R. F. (2004). Puberty and the onset of substance use and abuse. *Pediatrics, 114*(3), E300-E306.
Pine, D. S. (2004). Integrating Research on Developmental Psychopathology and Neuroscience in the Study of Adolescence: Introduction to Part II. *Annals of the New York Academy of Sciences, 1021*(1), 61-63.
Raine, A., Reynolds, C., Venables, P. H., & Mednick, S. A. (2002). Stimulation seeking and intelligence: A prospective longitudinal study. *Journal of Personality and Social Psychology, 82*(4), 663-674.
Raiola, E. (2003). Communication and Problem-Solving in Extended Field-Based Outdoor Adventure Education Courses. *Journal of Experiential Education, 26*(1), 50.

Redding, C. A., & Rossi, J. S. (1999). Testing a model of situational self-efficacy for safer sex among college students: Stage of change and gender-based differences. *Psychology & Health, 14*(3), 467-486.

Rees, C., Sheard, C., & Davies, S. (2002). The development of a scale to measure medical students' attitudes towards communication skills learning: the Communication Skills Attitude Scale (CSAS). *Medical Education, 36*(2), 141-147.

Reyna, V. F., & Farley, F. (2006). Risk and Rationality in Adolescent Decision Making: Implications for Theory, Practice, and Public Policy. *Psychological Science in the Public Interest, 7*(1), 1-44.

Roberts, T. G. (2003). *An Interpretation of Dewey's Experiential Learning Theory*.

Romer, D. (2003). *Reducing Adolescent Risk*. Thousand Oaks: Sage Publications.

Romer, D., & Hennessy, M. (2007). A biosocial-affect model of adolescent sensation seeking: The role of affect evaluation and peer-group influence in adolescent drug use. *Prevention Science, 8*(2), 89-101.

Rudman, L. A., Dohn, M. C., & Fairchild, K. (2007). Implicit self-esteem compensation: Automatic threat defense. *Journal of Personality and Social Psychology, 93*(5), 798-813.

Salovey, P., & Grewal, D. (2005). The Science of Emotional Intelligence. *Current Directions in Psychological Science, 14*(6), 281-285.

Shrier, L. A., Harris, S. K., & Beardslee, W. R. (2002). Temporal associations between depressive symptoms and self-reported sexually transmitted disease among adolescents. *Archives of Pediatrics & Adolescent Medicine, 156*(6), 599-606.

Siebenbruner, J., Zimmer-Gembeck, M. J., & Egeland, B. (2007). Sexual Partners and Contraceptive Use: A 16-Year Prospective Study Predicting Abstinence and Risk Behavior. *Journal of Research on Adolescence (Blackwell Publishing Limited), 17*(1), 179-206.

Stanton B., Burns J. (2003). Sustaining and Broadening Intervention Effects. In D. Romer (Ed.), *Reducing Adolescent Risk* (pp. 193-200). Thousand Oaks: Sage Publications.

Steinberg, L. (2004). Risk taking in adolescence - What changes, and why? In *Adolescent Brain Development: Vulnerabilities and Opportunities* (Vol. 1021, pp. 51-58).

Steinberg, L. (2007). Risk Taking in Adolescence: New Perspectives From Brain and Behavioral Science. *Current Directions in Psychological Science, 16*(2), 55-59.

Tritt, D. G. (1991). Cognitions of self as learner: A necessary objective in experiential education. *Psychological Reports, 69*(2), 591-598.

Ungar, M., Brown, M., Liebenberg, L., Othman, R., Kwong, W. M., Armstrong, M., et al. (2007). Uniqe Pathways to Resilience across Cultures. Adolescence, 42(166), 287-310.

Vohs, K. D., Baumeister, R. F., & Ciarocco, N. J. (2005). Self-Regulation and Self-Presentation: Regulatory Resource Depletion Impairs Impression Management and Effortful Self-Presentation Depletes Regulatory Resources. *Journal of Personality and Social Psychology, 88*(4), 632-657.

Vukman, K. B. (2005). Developmental differences in metacognition and their connections with cognitive development in adulthood. *Journal of Adult Development, 12*(4), 211-221.
Weinberger, D. R., Elvevag, Britta & Giedd, Jay (2005). *The Adolescent Brain: A Work in Progress*. Washington, DC: National Campaign to Prevent Teen Pregnancy.
Werner, E. E. a. J., Jeannette L. (2004). The Role of Caring Adults in the Lives of Children of Alcoholics *SUBSTANCE USE & MISUSE 39*(5), 699-720.
Wertsch, J. V., & Landsmann, L. T. (1991). Sociocultural setting and the zone of proximal development: The problem of text-based realities. In *Culture, schooling, and psychological development.* (pp. 71-86). Westport, CT, US: Ablex Publishing.
Wolfe, B. D., & Dattilo, J. (2006). Participants' Perceptions of Communication During and After a One-Day Challenge Course Program. *Journal of Experiential Education, 29*(2), 126-144.
Zuckerman, M., & Kuhlman, D. M. (2000). Personality and Risk-Taking: Common Biosocial Factors. Journal of Personality, 68(6), 999-1029.

Vita

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